

FIG. 1

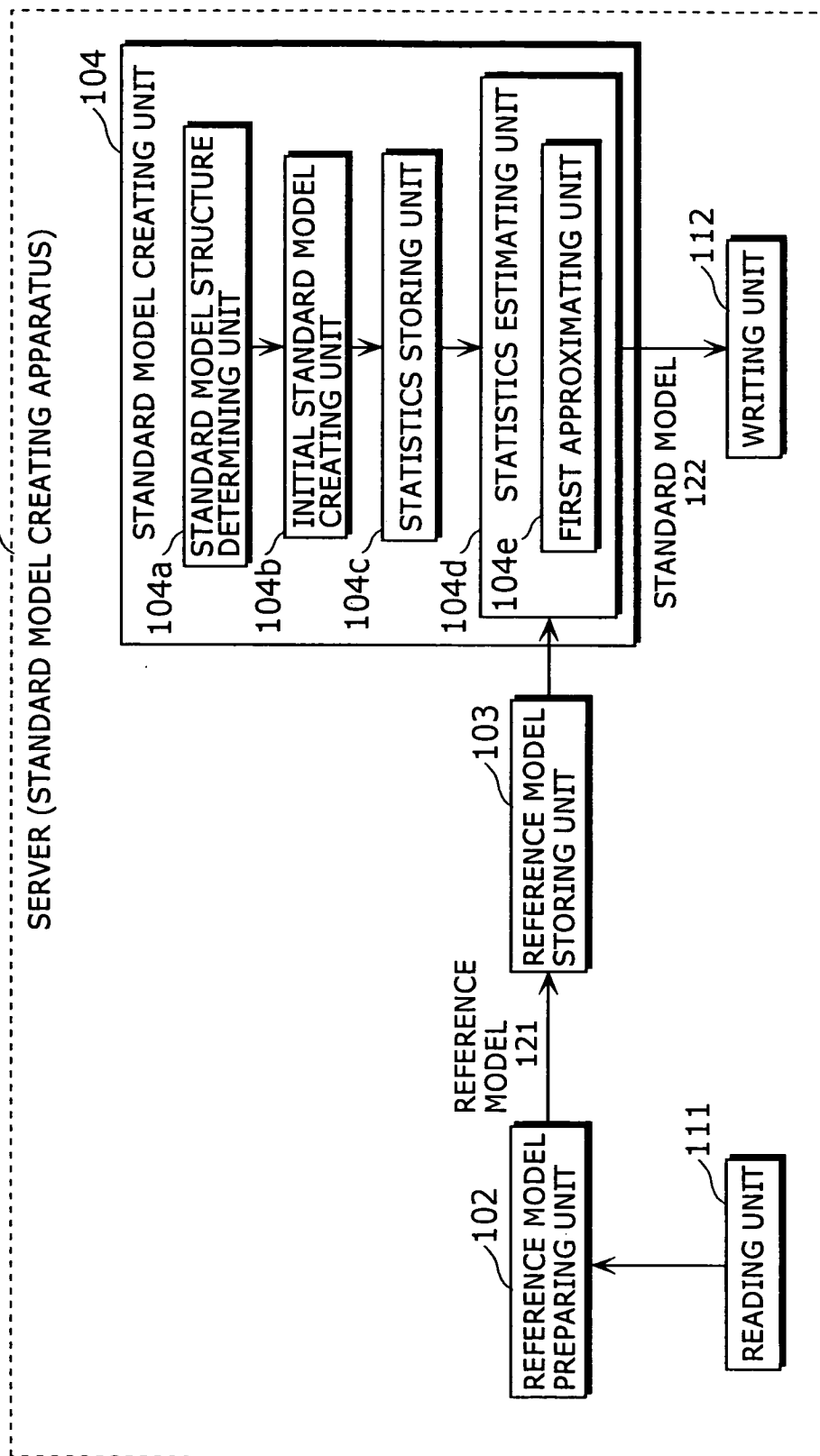


FIG. 2

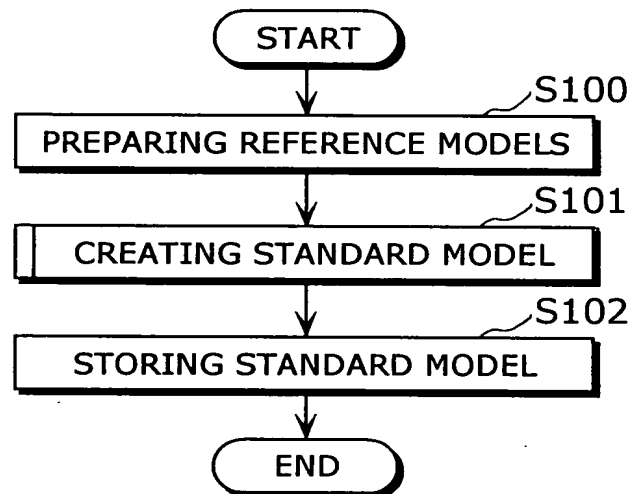


FIG. 3

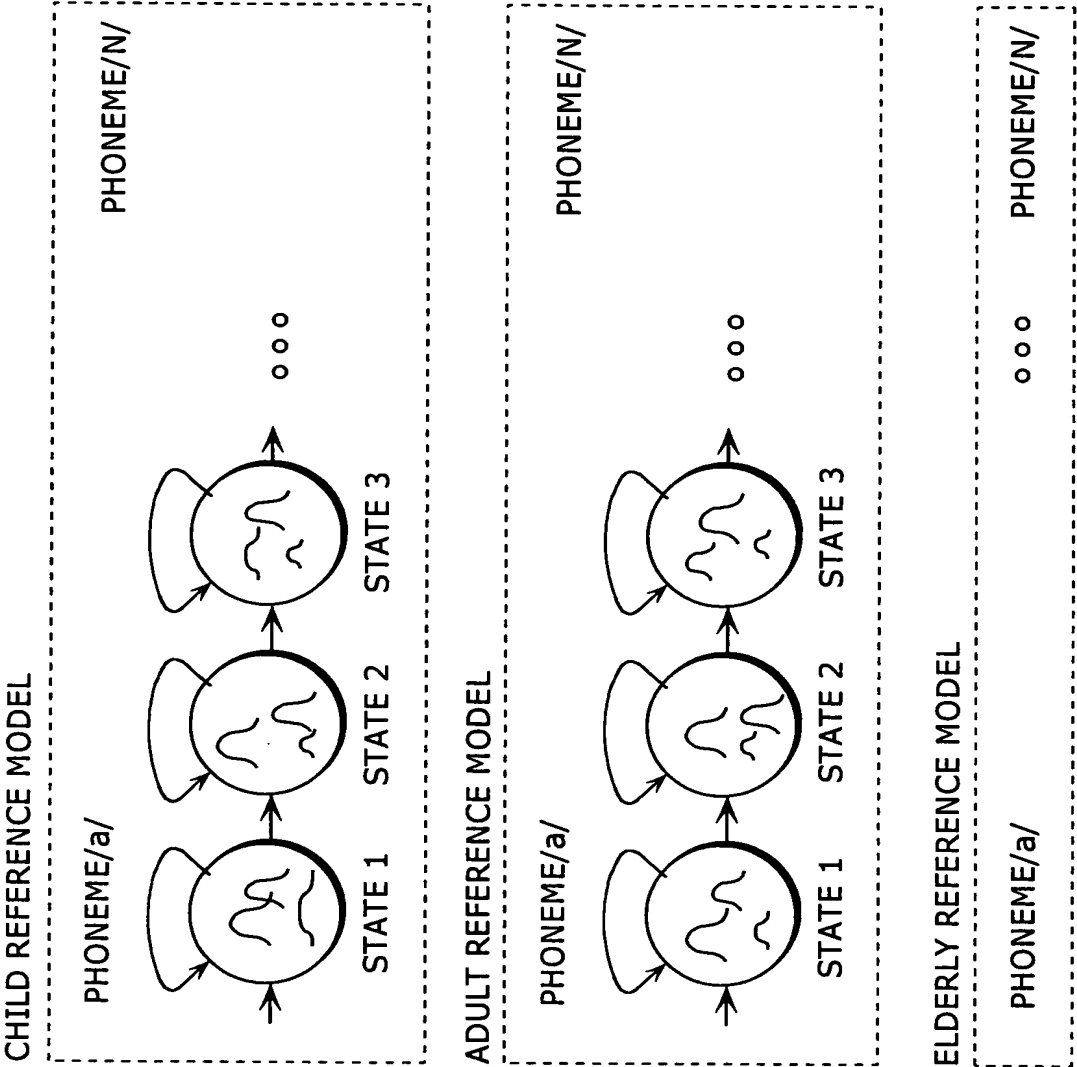


FIG. 4

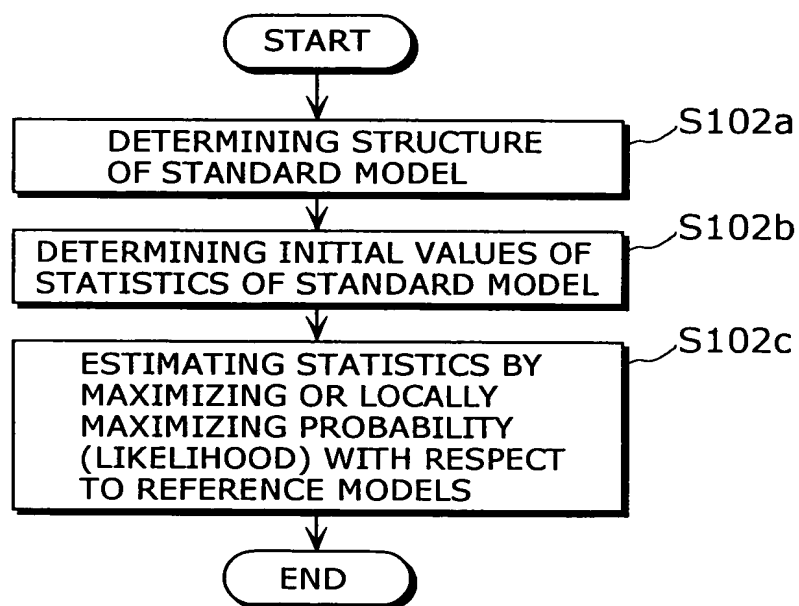


FIG. 5A

APPROXIMATE EXPRESSION

$$\gamma(x, m) = \frac{\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})}{\sum_{k=1}^{M_f} \omega_{f(k)} f(x; \mu_{f(k)}, \sigma^2_{f(k)})} \approx \frac{\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})}{u_{h(m)} h(x; \mu_{h(m)}, \sigma^2_{h(m)})}$$

$(u_{h(m)} h(x; \mu_{h(m)}, \sigma^2_{h(m)})$
is created using all
 $\omega_{f(k)} f(x; \mu_{f(k)}, \sigma^2_{f(k)})$
 $(k=1, 2, \dots, M_f)$

FIG. 5B

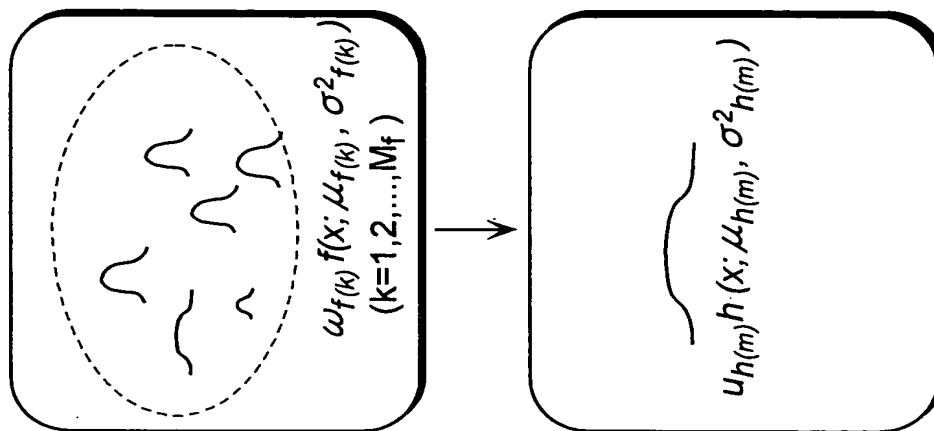


FIG. 6A

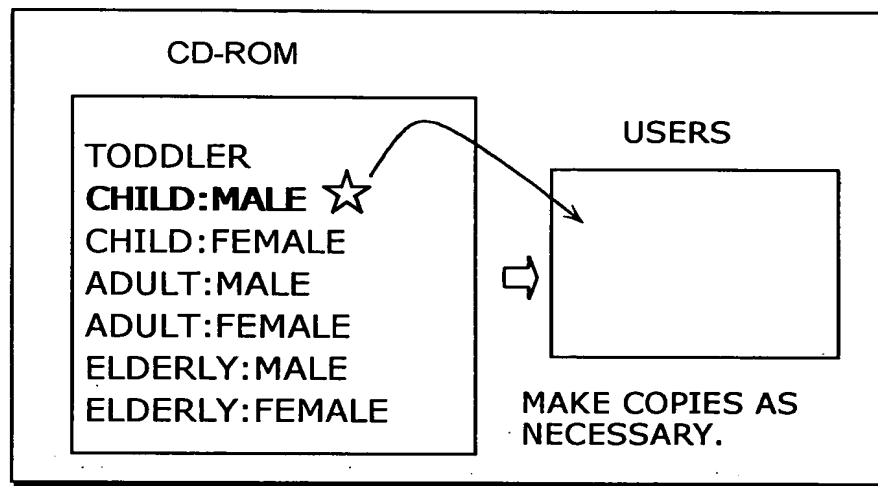


FIG. 6B

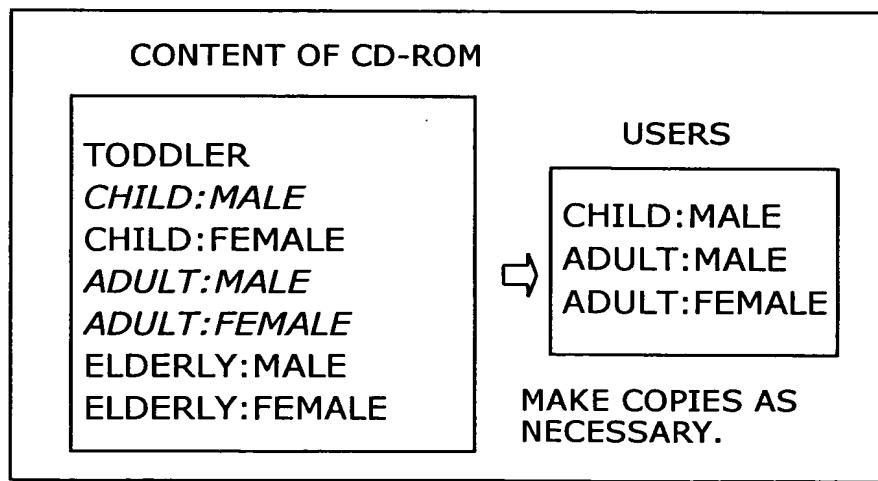


FIG. 7A

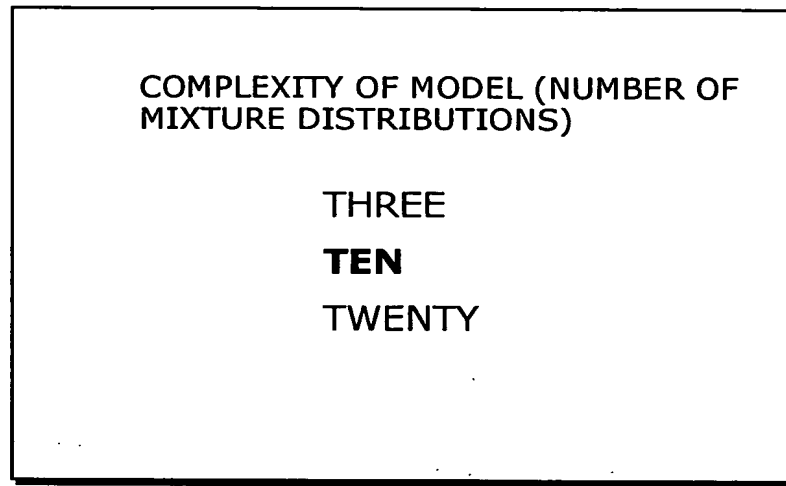


FIG. 7B

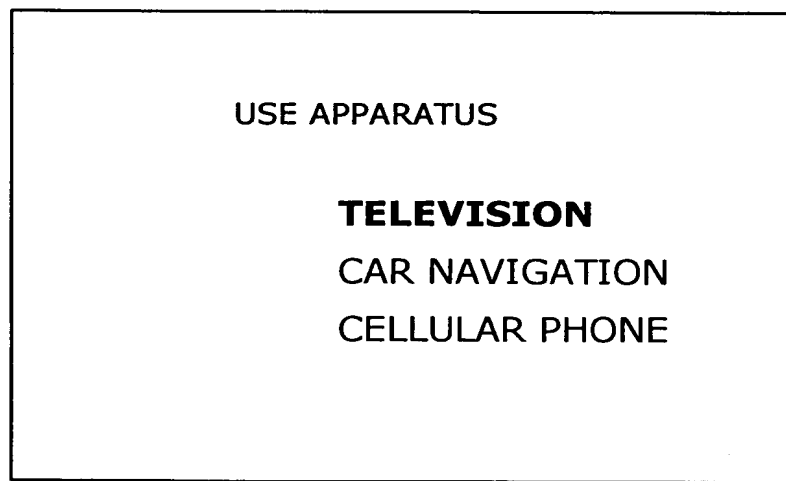


FIG. 8A

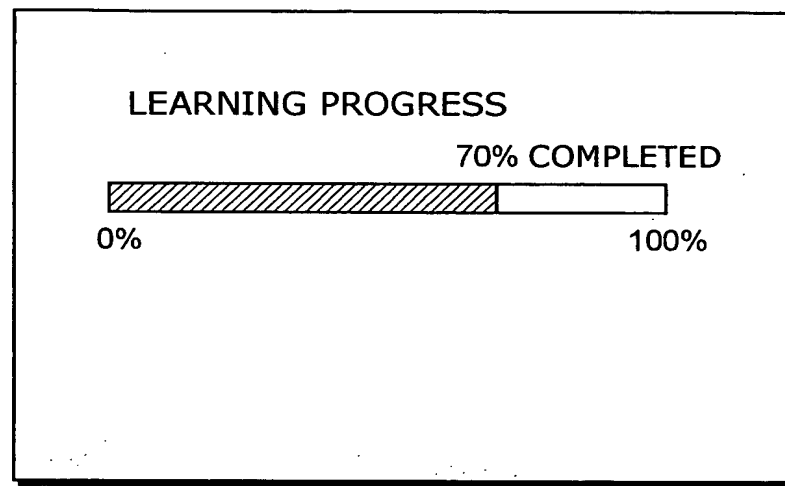


FIG. 8B

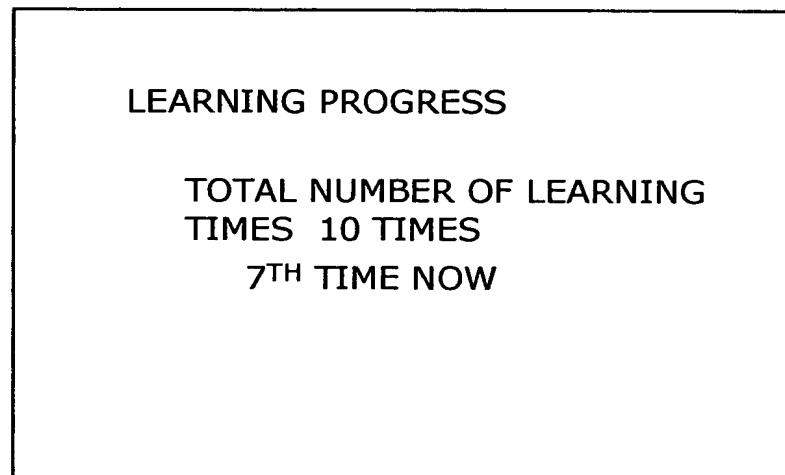


FIG. 9

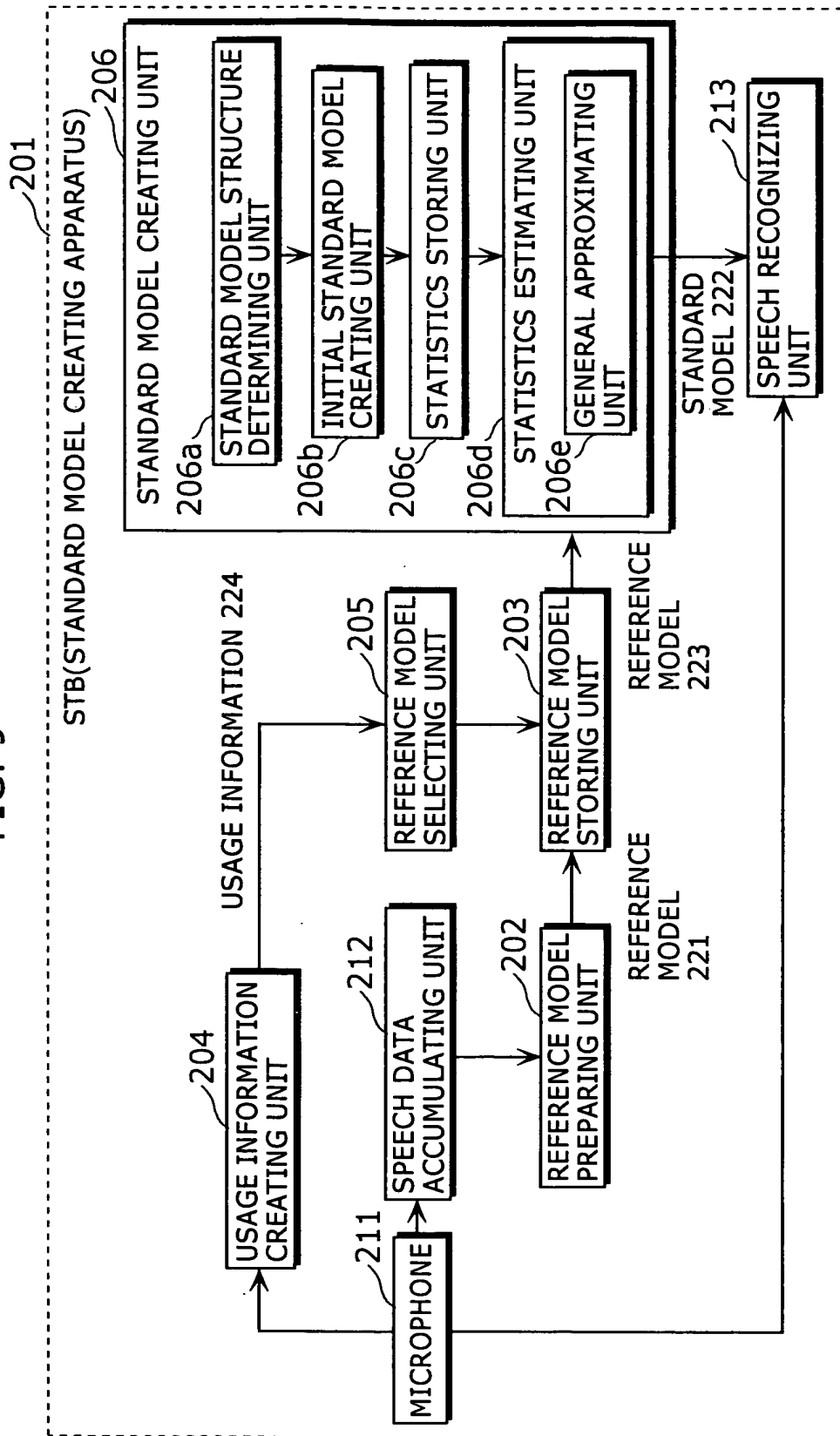


FIG. 10

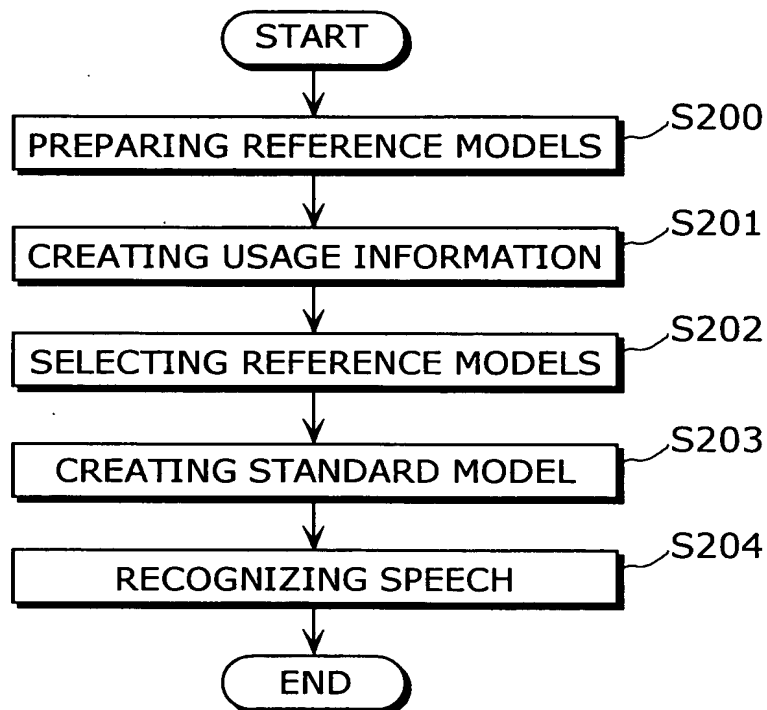


FIG. 11

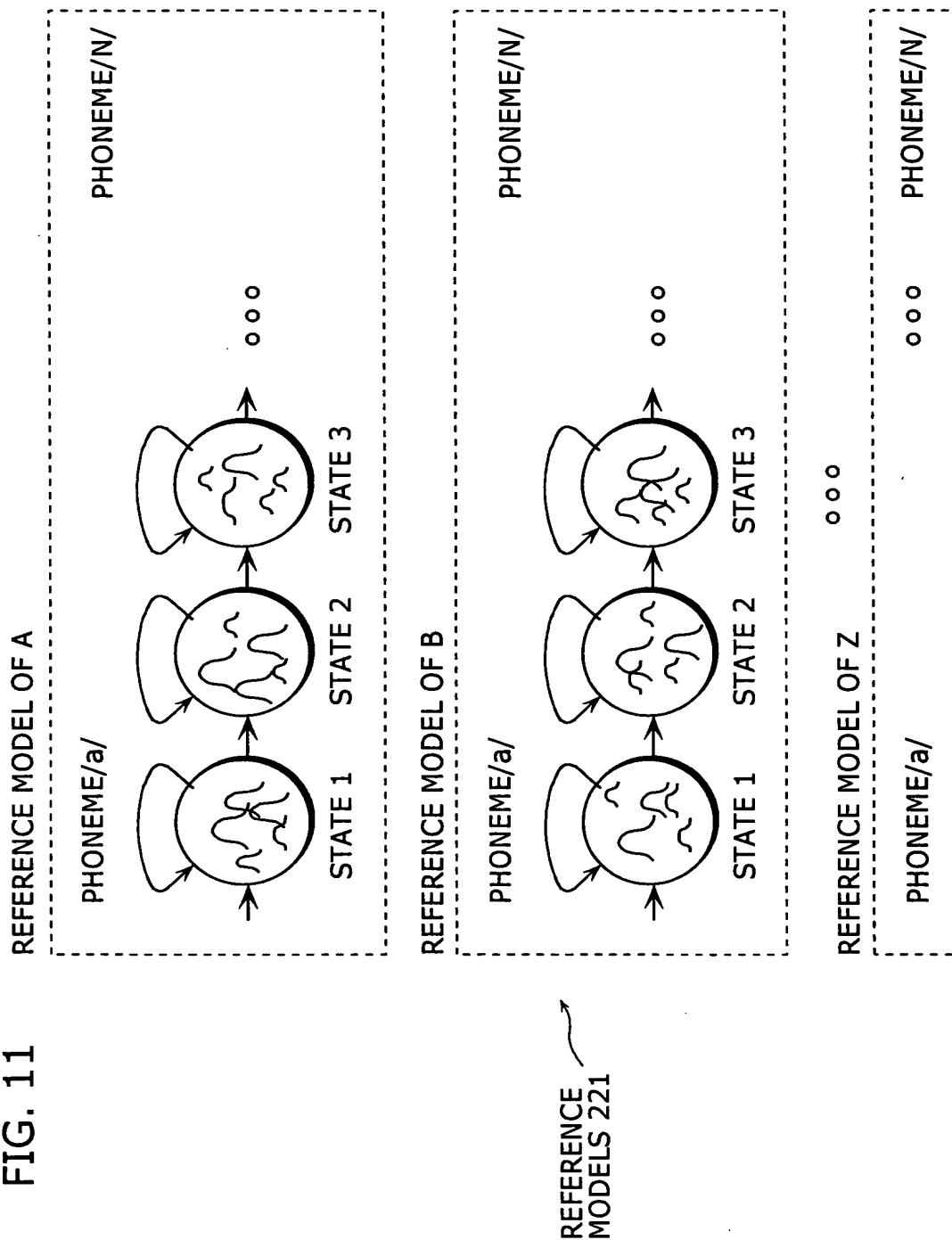


FIG. 12A

APPROXIMATE EXPRESSION

$$\gamma(x, m) = \frac{\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})}{\sum_{k=1}^{M_f} \omega_{f(k)} f(x; \mu_{f(k)}, \sigma^2_{f(k)})} \approx \frac{\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})}{u_{h(m)} h(x; \mu_{h(m)}, \sigma^2_{h(m)})}$$

 $u_{h(m)} h(x; \mu_{h(m)}, \sigma^2_{h(m)})$

is created using

 $\omega_{f(k)} f(x; \mu_{f(k)}, \sigma^2_{f(k)})$
 $(k=1, 2, \dots, P_{h(m)})$ where $P_{h(m)}$ is one or more, that is close to

 $\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})$

DISTANCES : MEAN EUCLIDEAN DISTANCE,
MAHALANOBIS DISTANCE,
KULLBACK-LEIBLER (KL) DISTANCE, ETC.

FIG. 12B

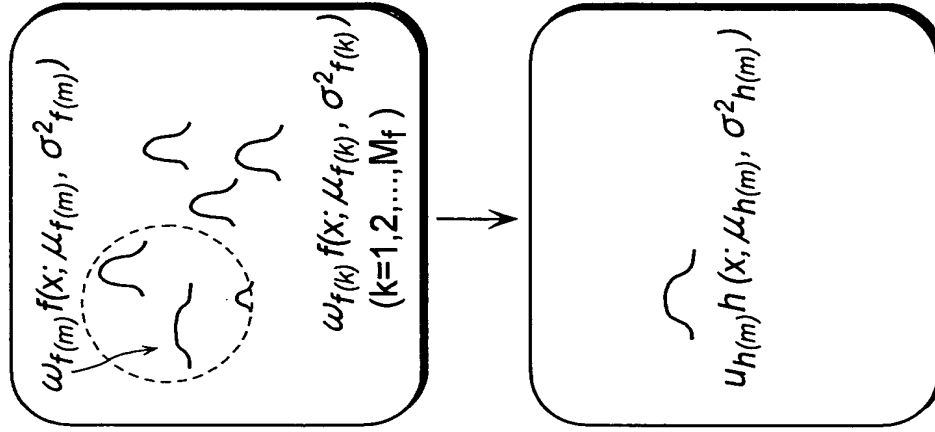


FIG. 13

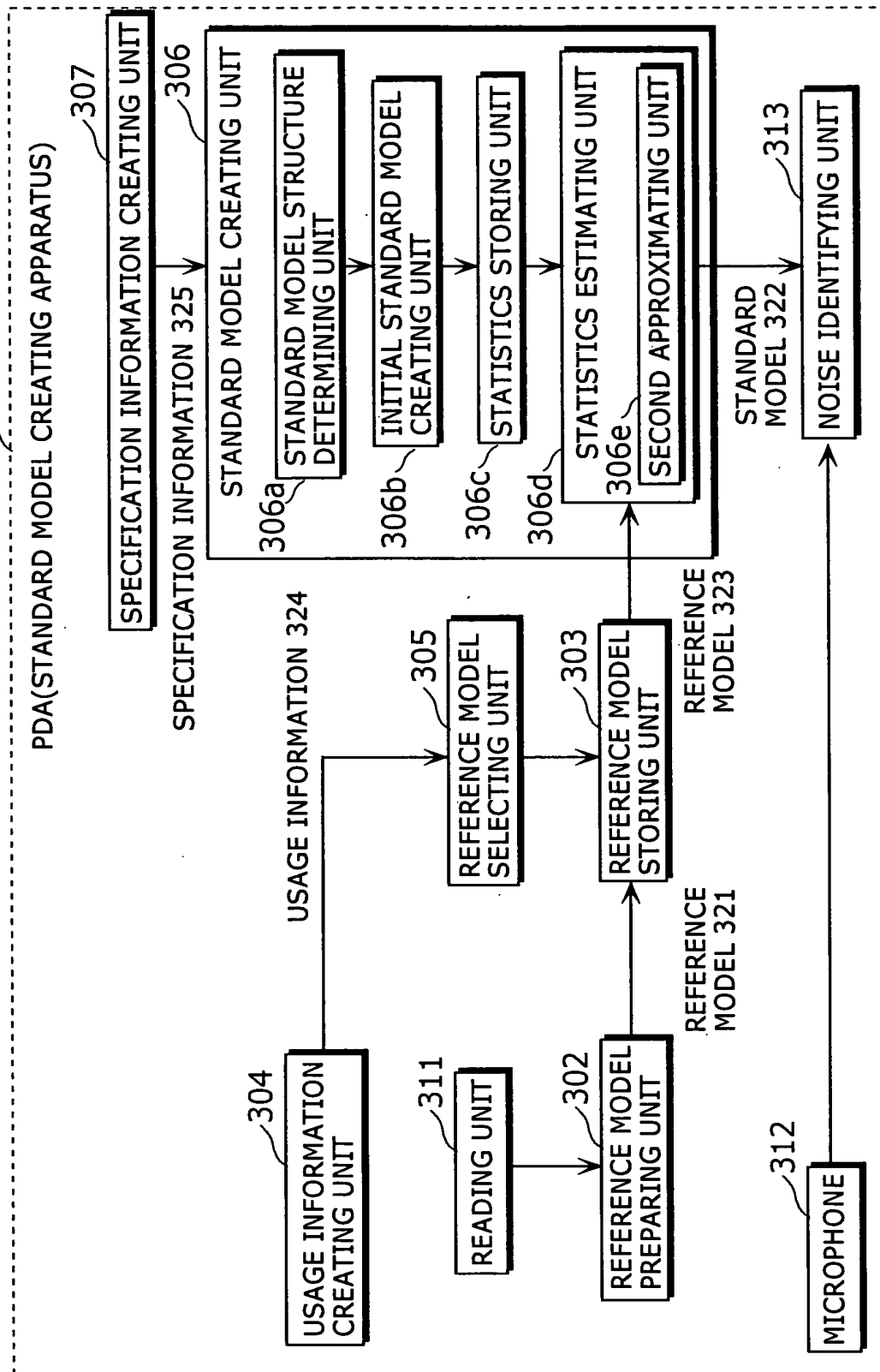


FIG. 14

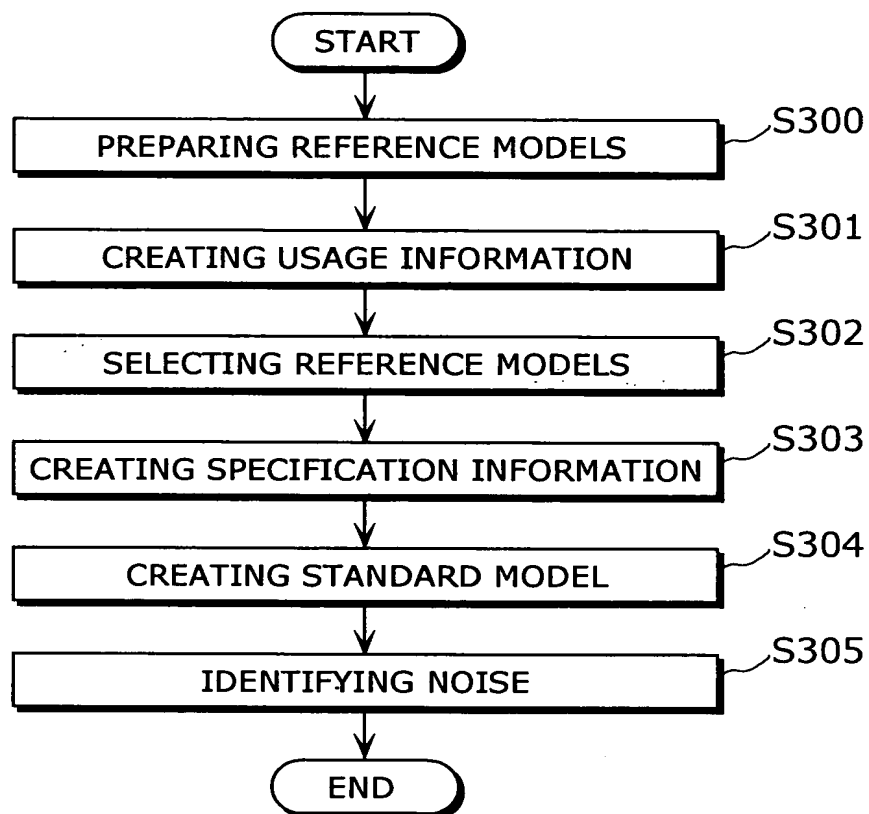


FIG. 15

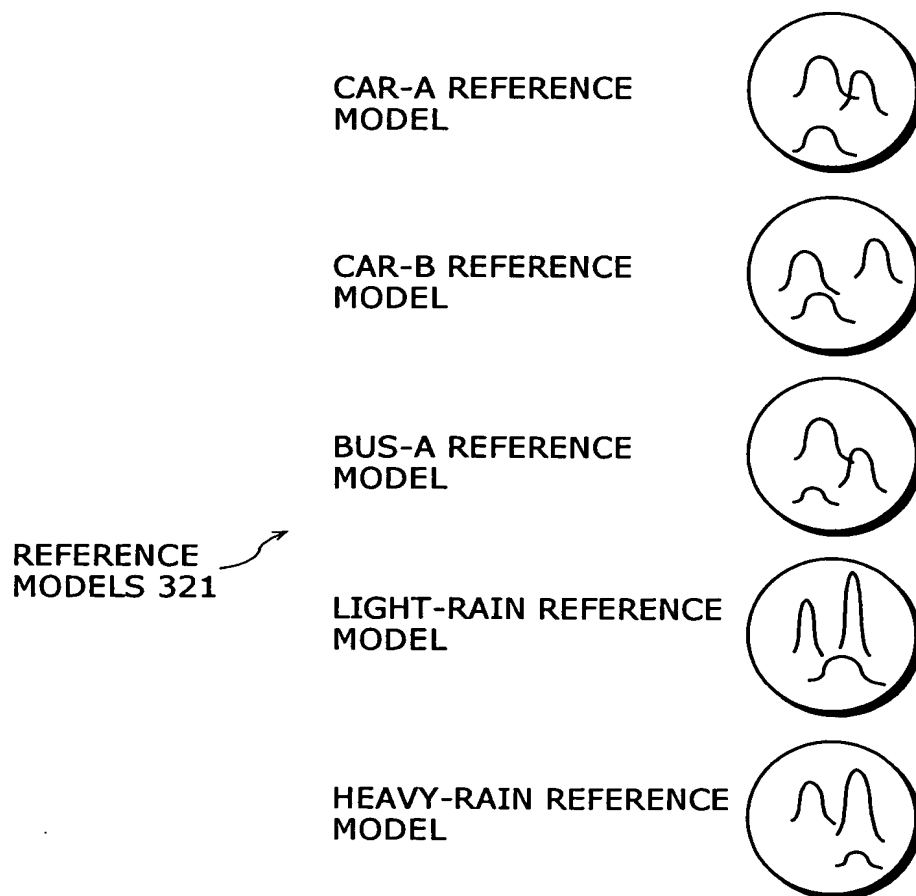


FIG. 16

NOISE TYPE TO BE IDENTIFIED	
1. VEHICLE	1. 1. CAR
	1. 2. BUS
	1. 3. TRUCK
2. RAIN	
3. AIRPLANE	
4. WARNING SOUND	

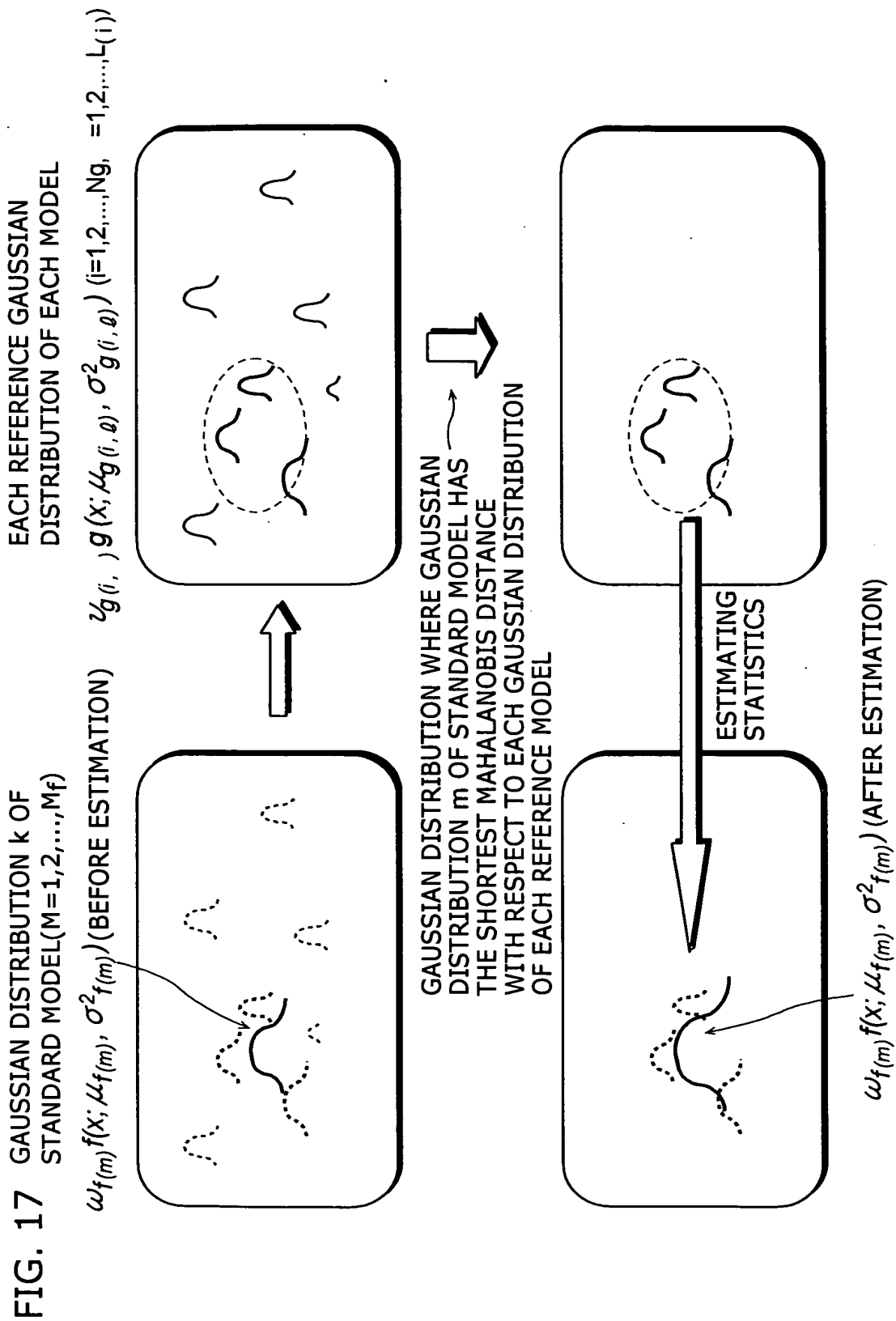


FIG. 18A

APPROXIMATE EXPRESSION

$$\gamma(x, m) = \frac{\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})}{\sum_{k=1}^{M_f} \omega_{f(k)} f(x; \mu_{f(k)}, \sigma^2_{f(k)})} \approx 1.0$$

INDEX (m) OF

 $\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})$ (m=1,2,...,M_f)

WHICH IS CLOSEST TO

 $\nu_{g(i, \varnothing)} g(x; \mu_{g(i, \varnothing)}, \sigma^2_{g(i, \varnothing)})$ (i=1,2,...,N_g, $\varnothing=1,2,...,L(i)$) IS DETERMINED.

STATISTICS OF

 $\omega_{f(m)} f(x; \mu_{f(m)}, \sigma^2_{f(m)})$ (m=1,2,...,M_f) IS OBTAINED USING $\nu_{g(i, \varnothing)} g(x; \mu_{g(i, \varnothing)}, \sigma^2_{g(i, \varnothing)})$ (i=1,2,...,N_g, $\varnothing=1,2,...,L(i)$)

TO WHICH INDEX (m) HAS BEEN ASSIGNED, ACCORDING TO STATISTICS PROCESSING CALCULATION SIMILAR TO "METHOD USING SUFFICIENT STATISTICS (NONPATENT LITERATURE 2)".

DISTANCES : MEAN EUCLIDEAN DISTANCE,
MAHALANOBIS DISTANCE,
KULLBACK-LEIBLER (KL) DISTANCE, ETC.

FIG. 18B

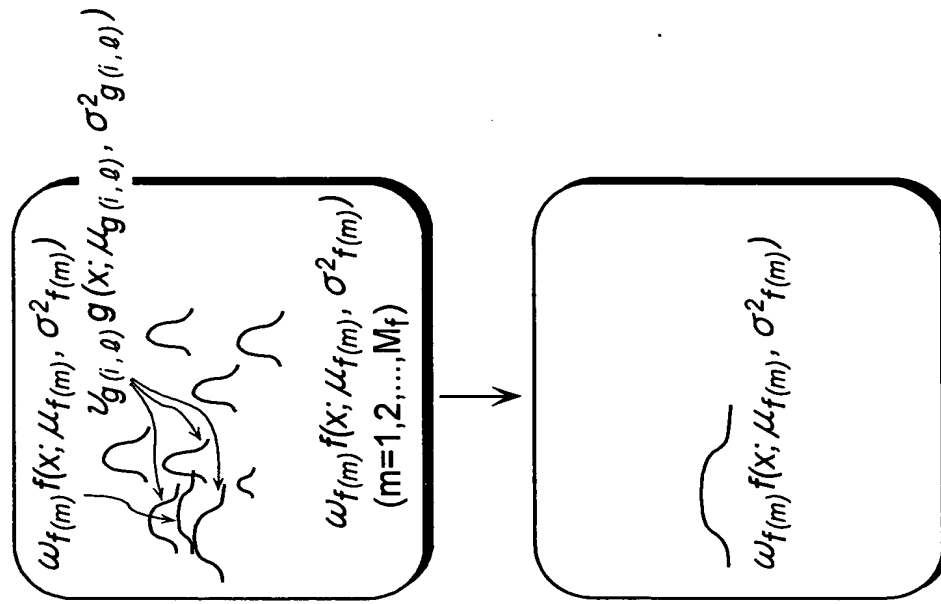


FIG. 19

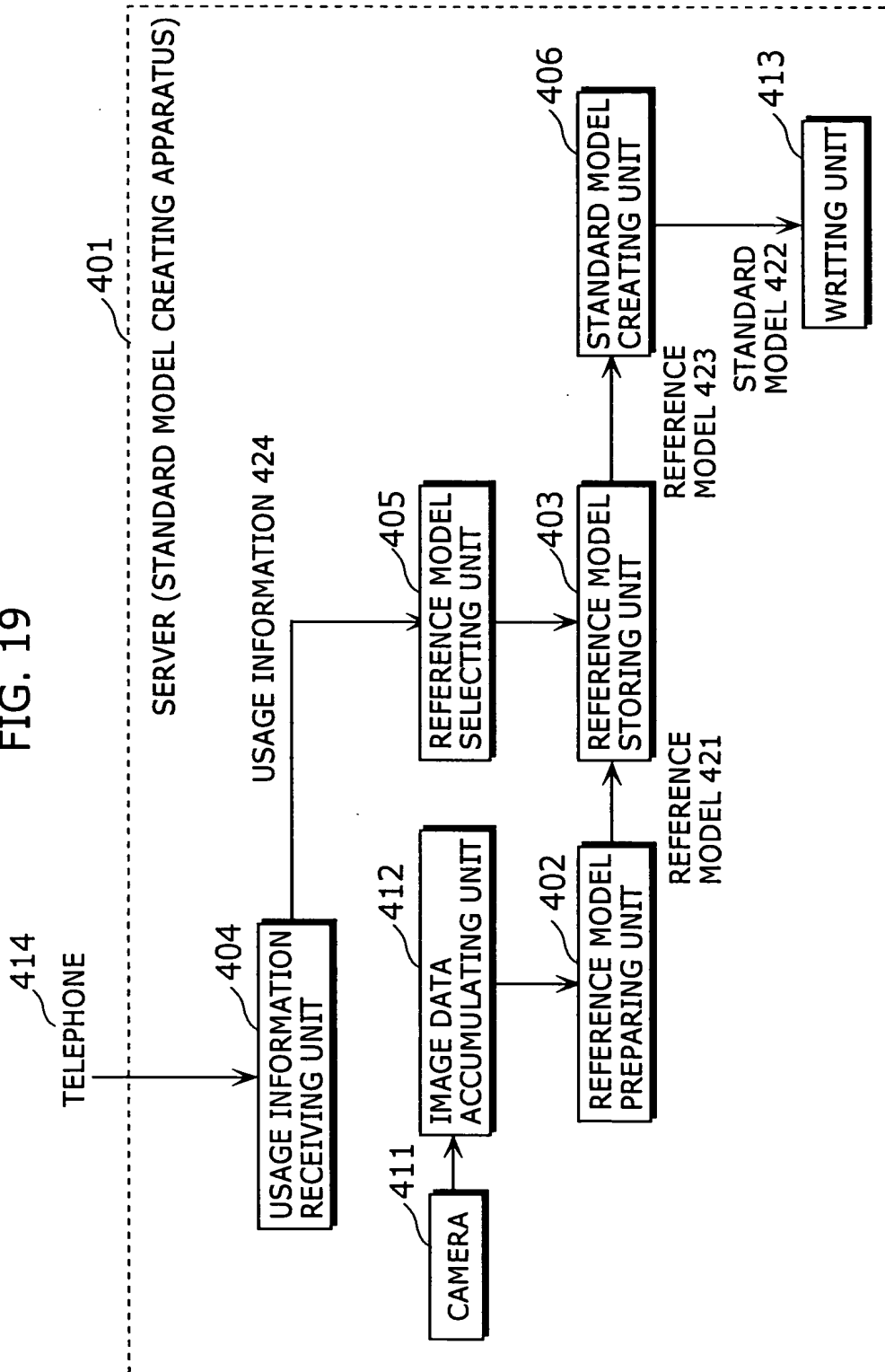
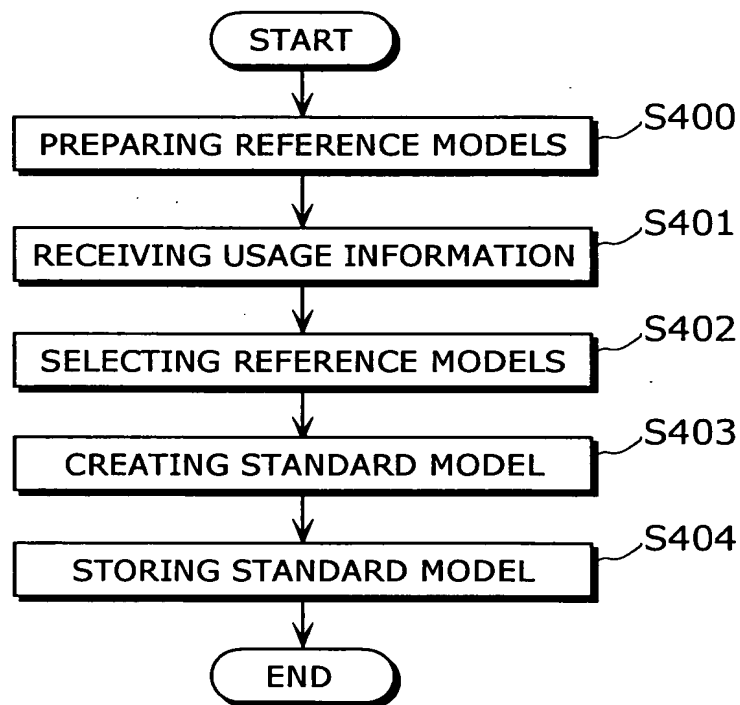


FIG. 20



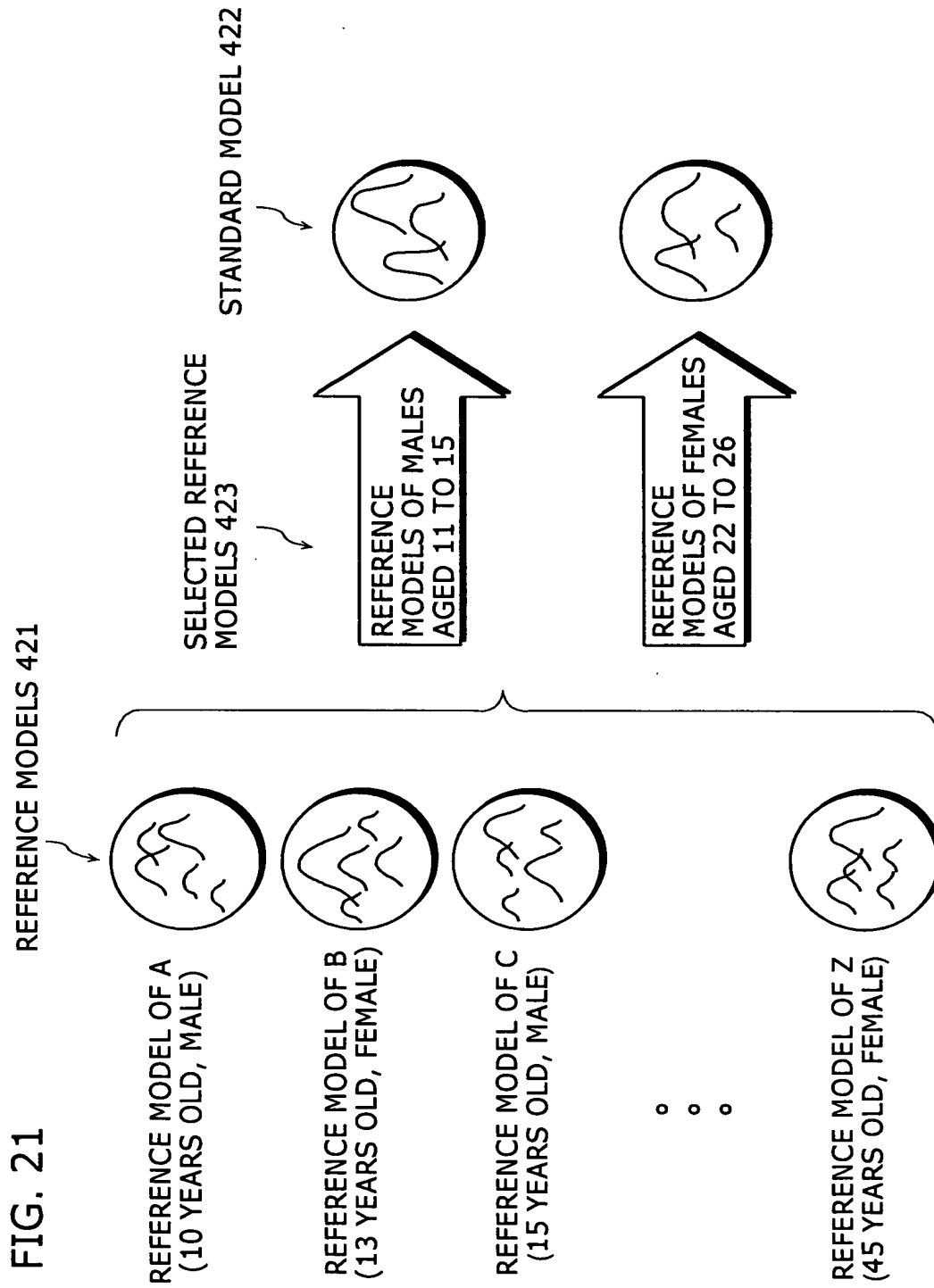


FIG. 22

NAME"FATHER"	
ADDRESS"OSAKA CITY"	GENDER <input type="checkbox"/> MALE <input checked="" type="checkbox"/> FEMALE
AGE "50 YEARS OLD"	
HOBBY	
<input checked="" type="checkbox"/> MOTORING	<input type="checkbox"/> MESSAGE
<input type="checkbox"/> WATCHING SPORTS	<input type="checkbox"/> COMPUTER
<input type="checkbox"/> FISHING	<input type="checkbox"/> GAME
<input type="checkbox"/> SHOPPING	
<input checked="" type="checkbox"/> HOT SPRING	
<input type="checkbox"/> GOLF	
<input type="checkbox"/> CAMP	

FIG. 23

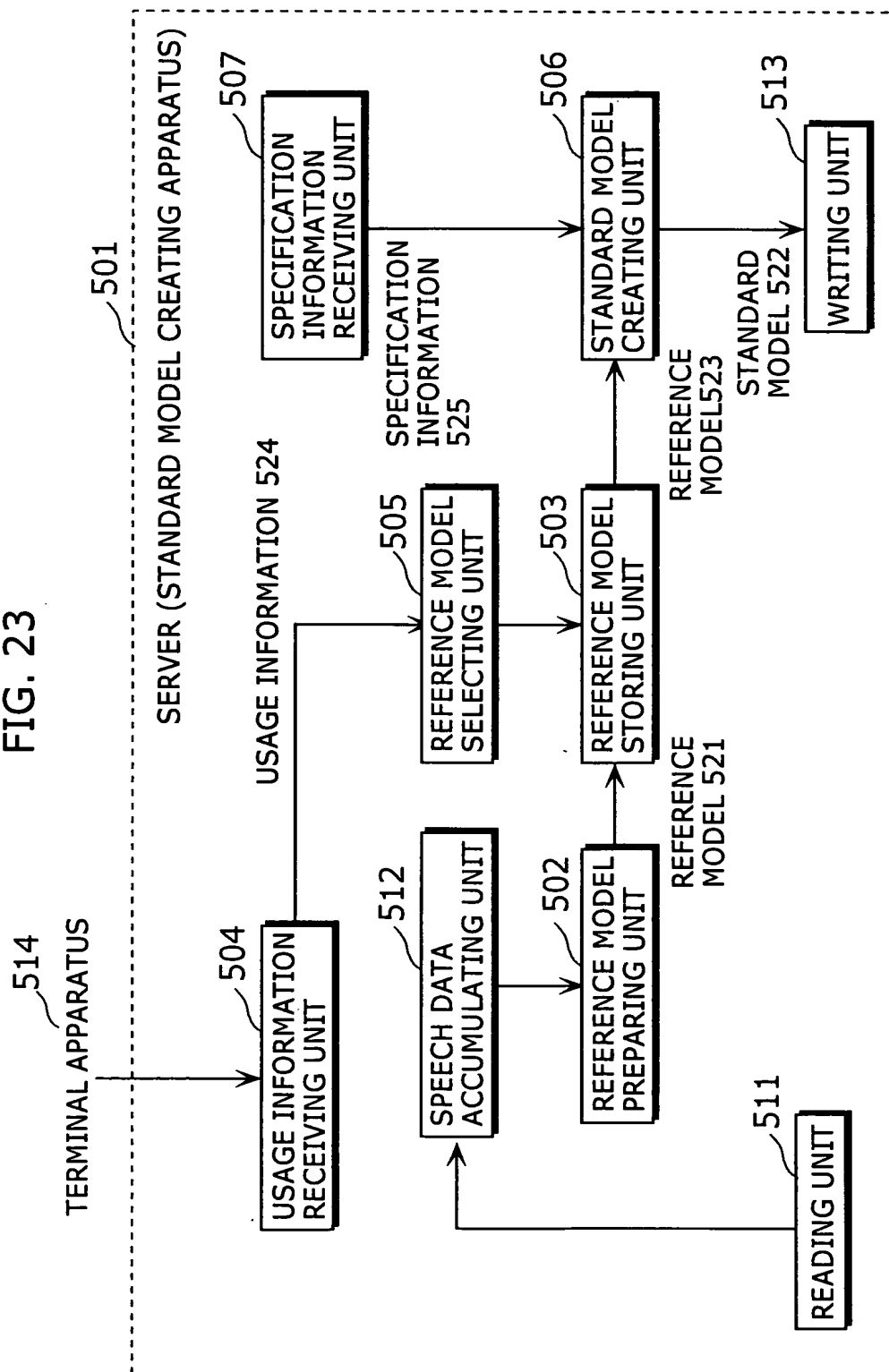


FIG. 24

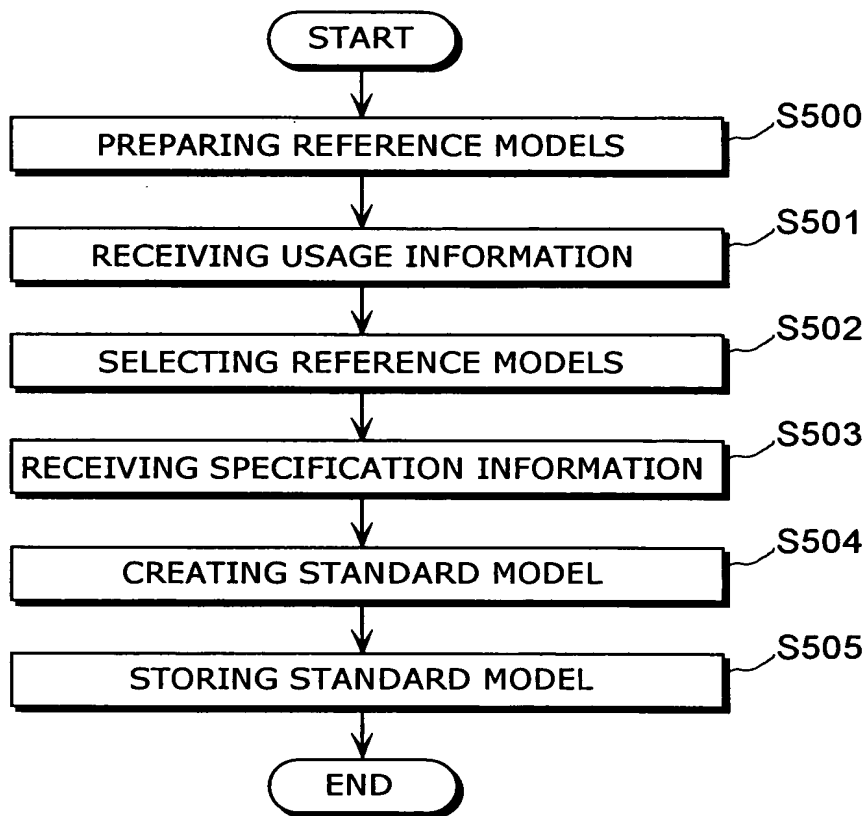


FIG. 25

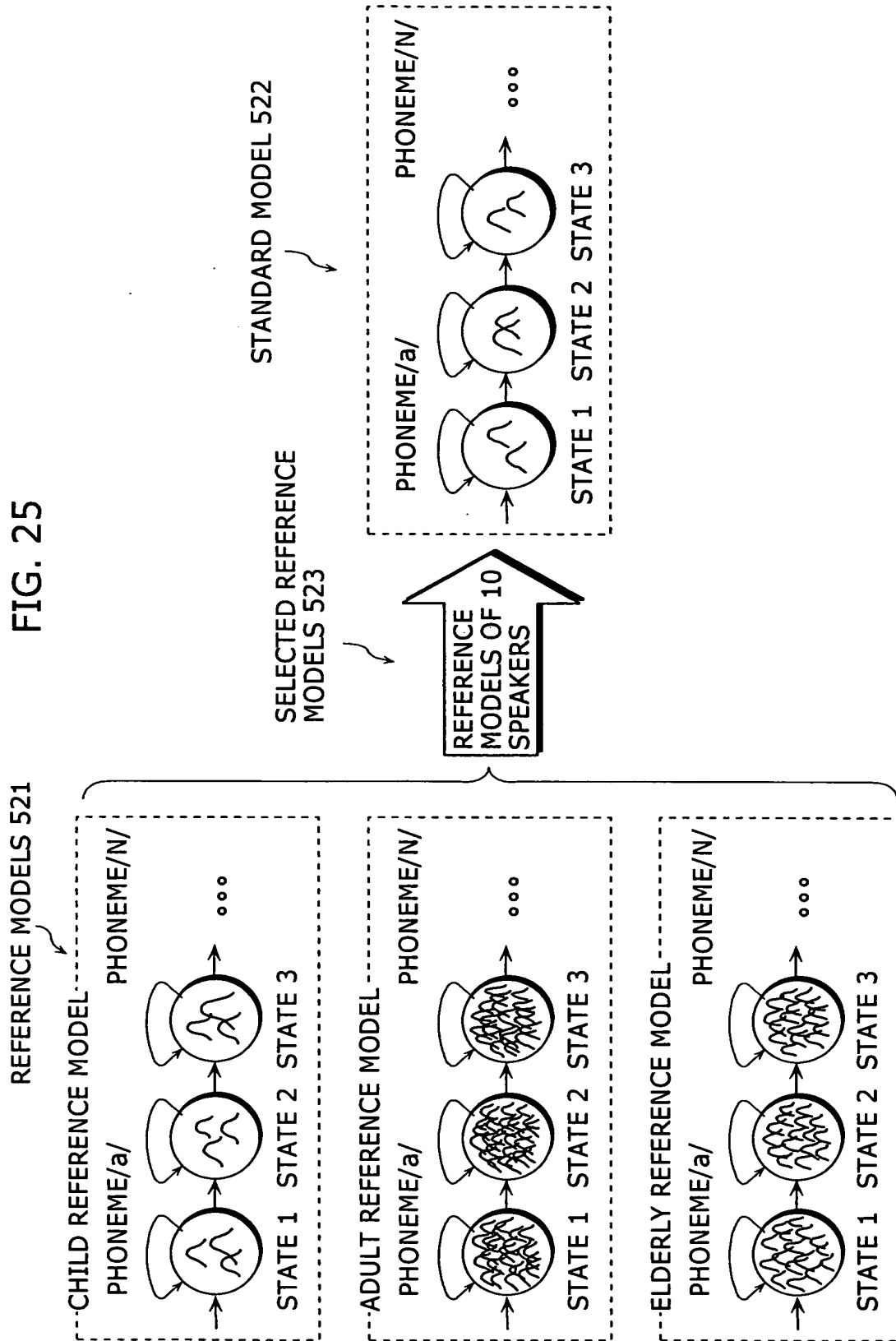


FIG. 26

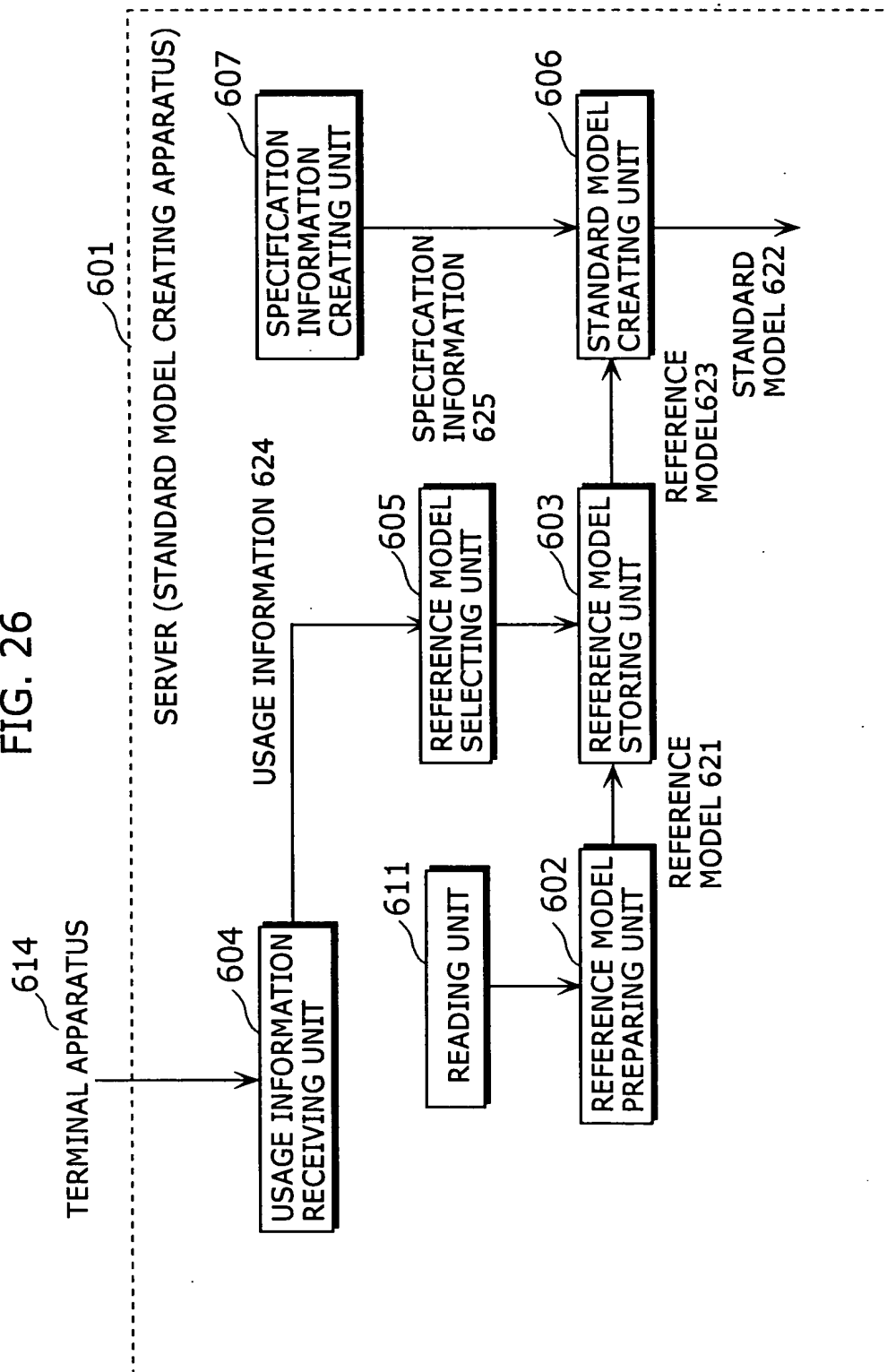


FIG. 27

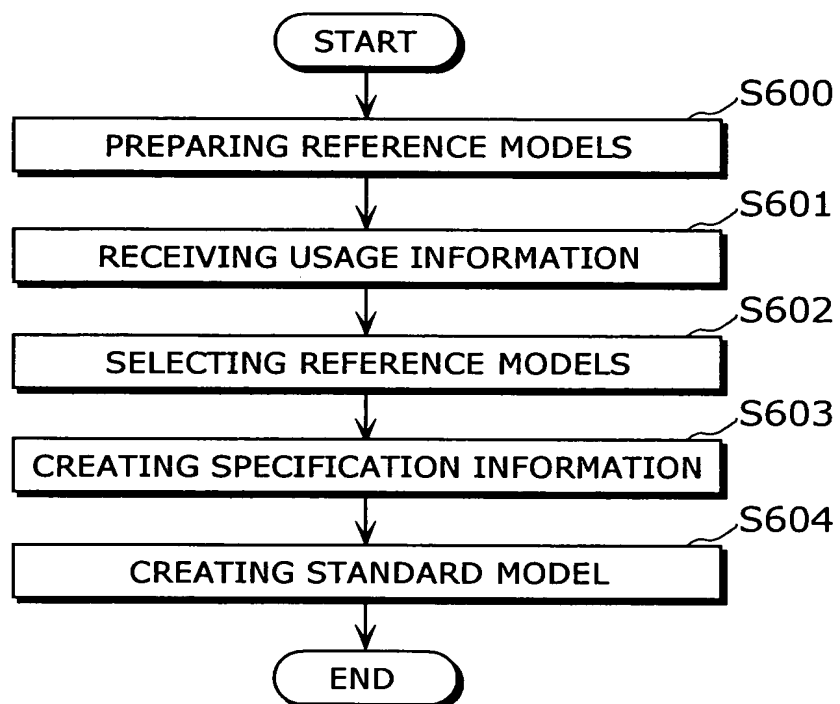


FIG. 28

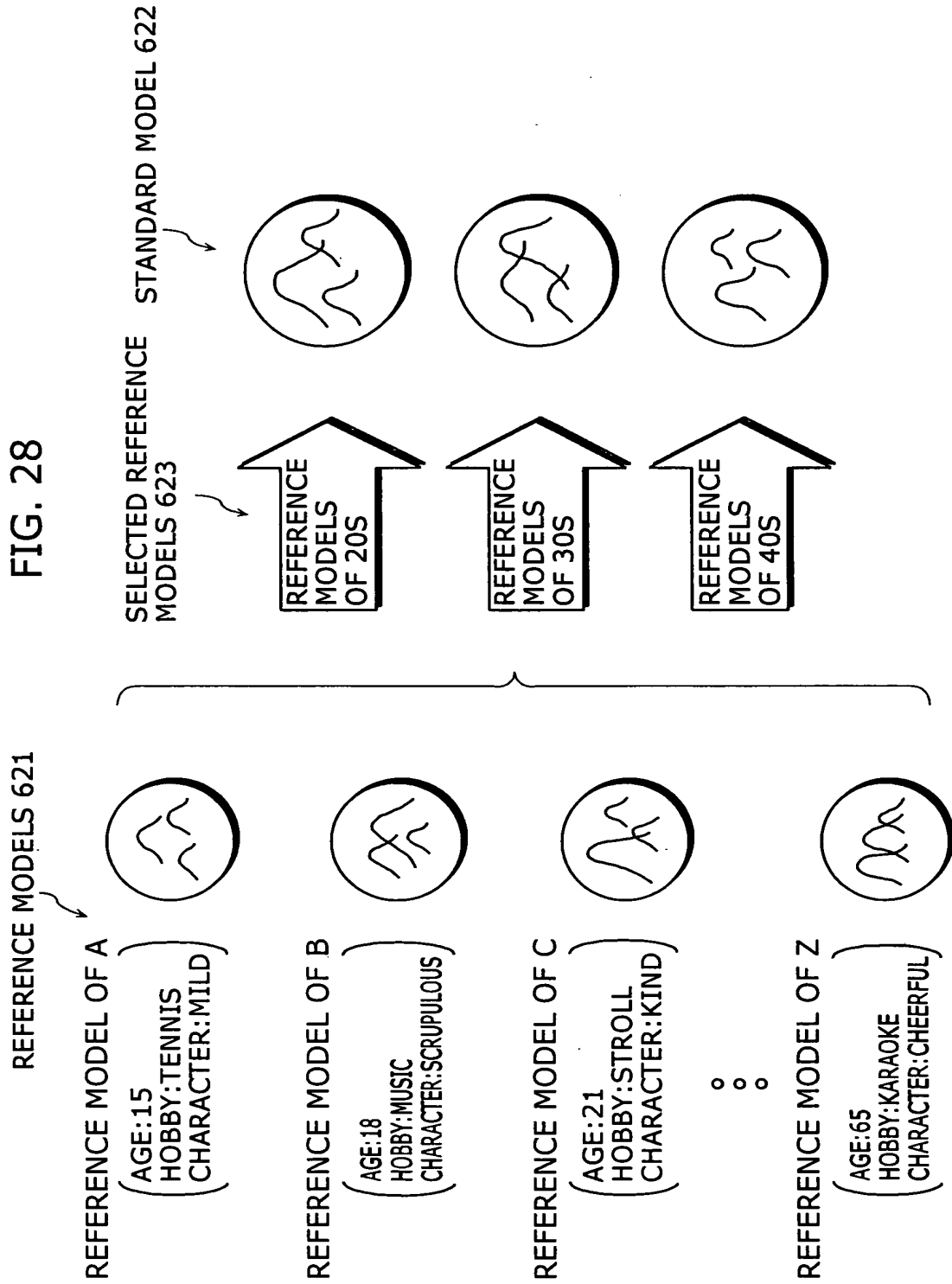


FIG. 29

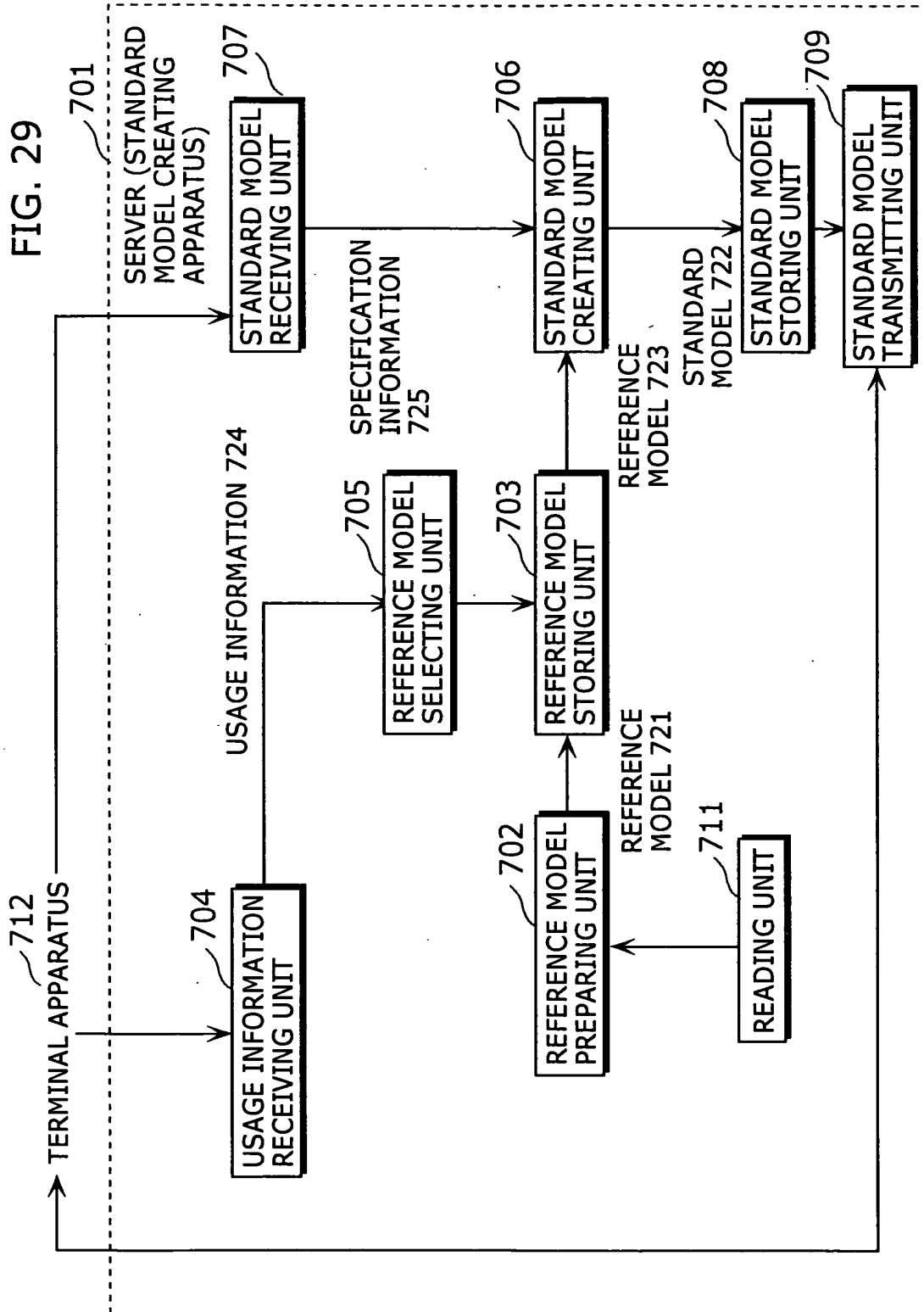
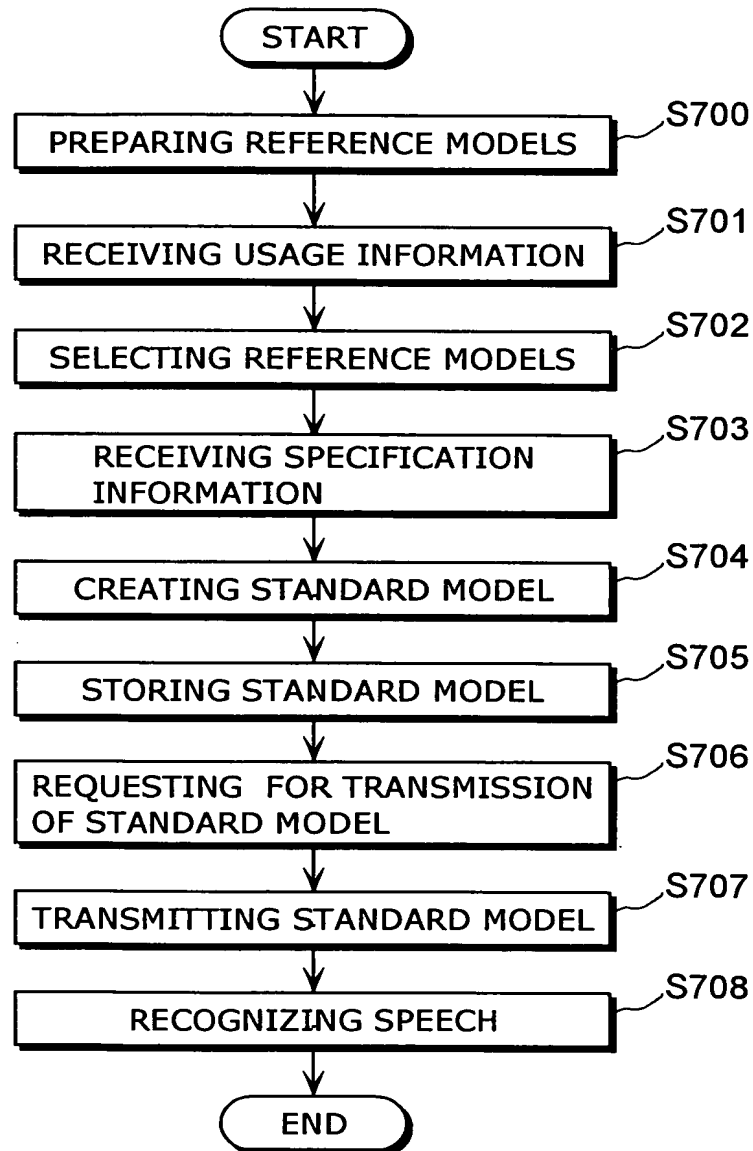


FIG. 30



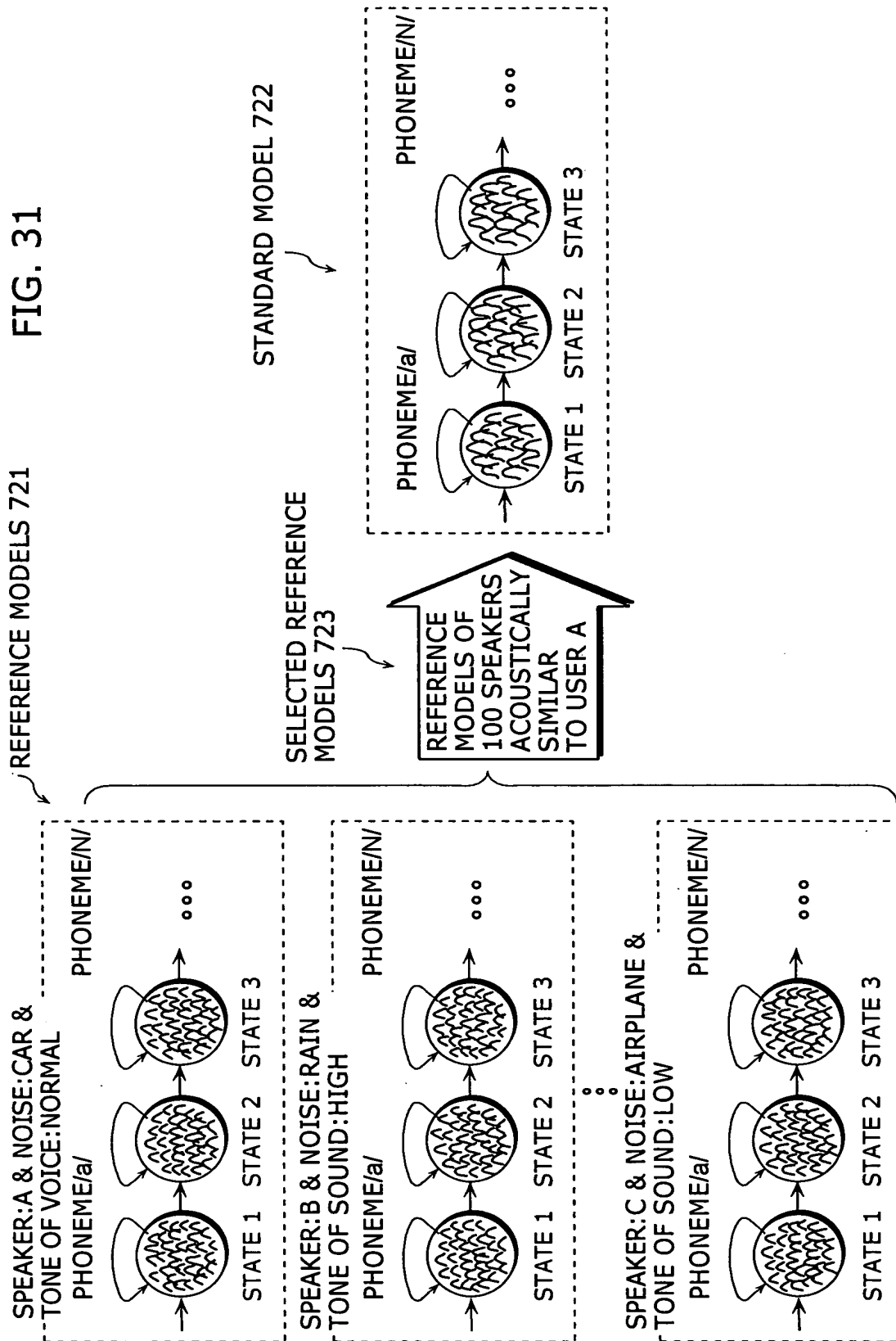


FIG. 32

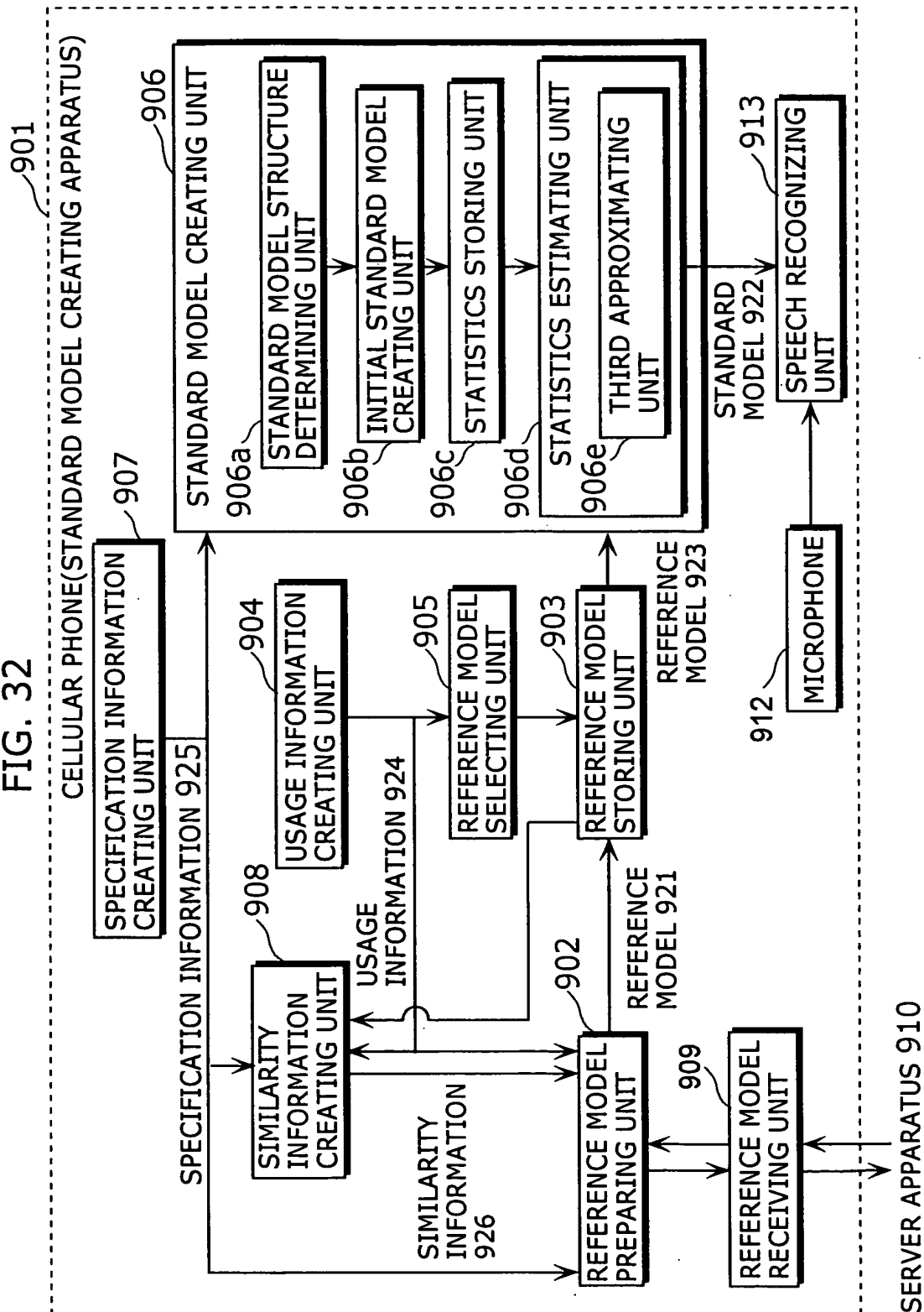


FIG. 33

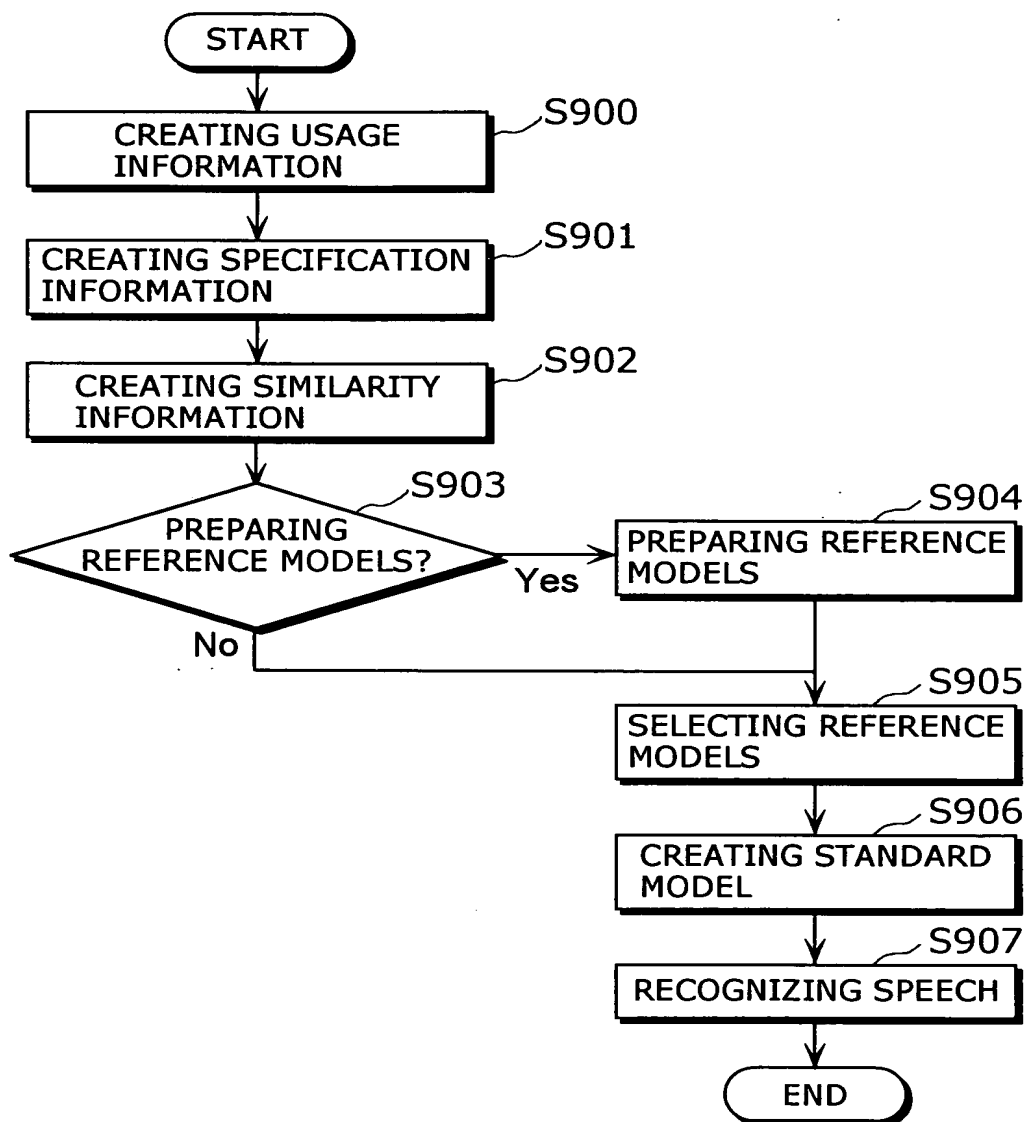
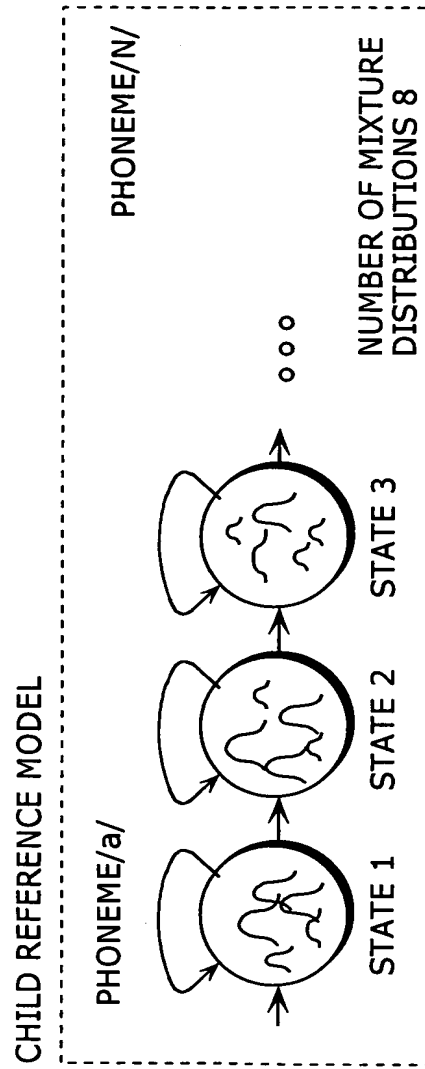


FIG. 34



921
MODEL

FIG. 35

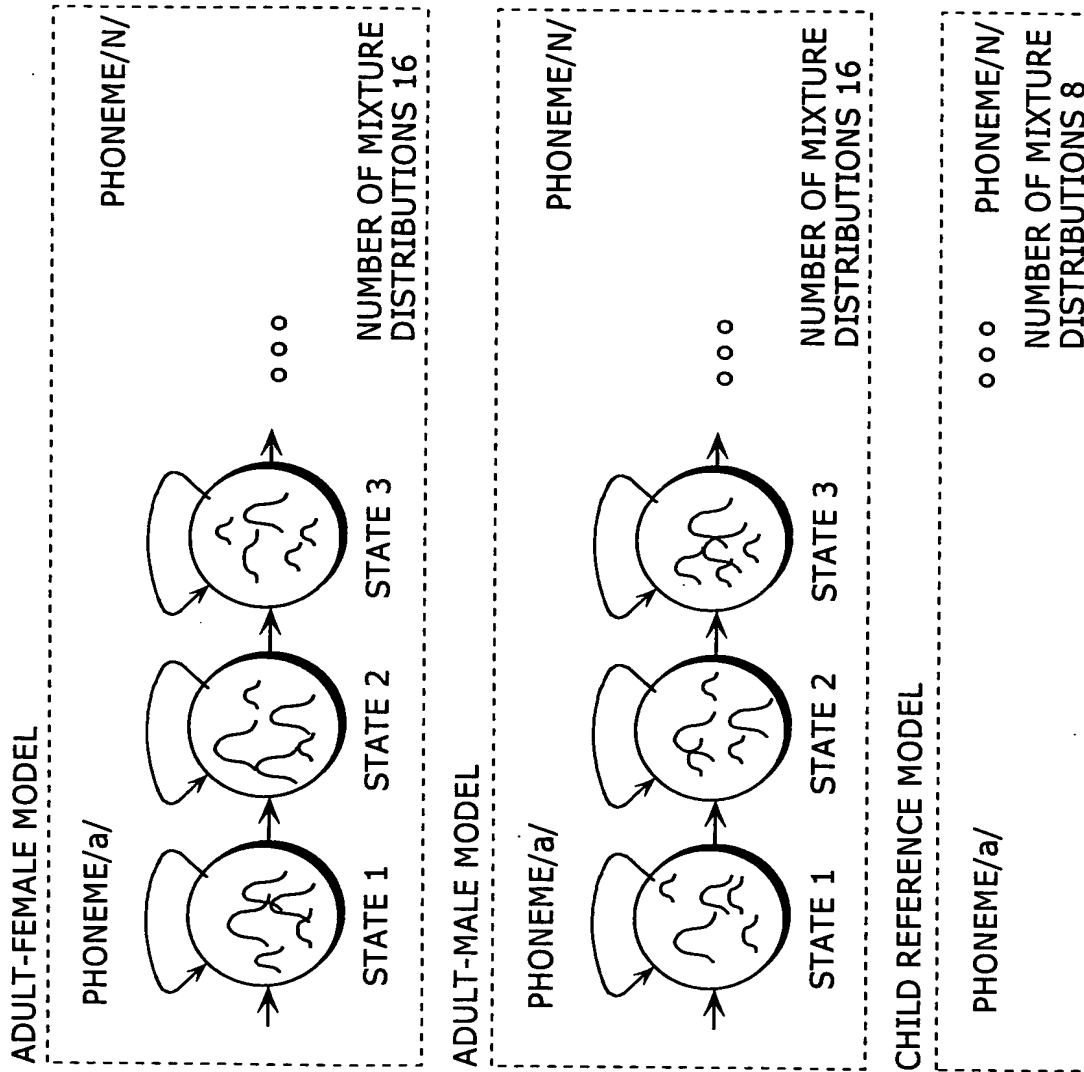


FIG. 36A

INPUT OF USER INFORMATION

1. CHILD
2. ADULT FEMALE
3. ADULT MALE
4. ADULT
5. NEXT SCREEN

MEMO

MENU

1	2	3
4	5	6
7	8	9
*	0	#

FIG. 36B

INPUT OF USER INFORMATION

INPUT "AUDIO" USING MICROPHONE WHILE PRESSING MENU BUTTON

MEMO

MENU

1	2	3
4	5	6
7	8	9
*	0	#

AUDIO

MICROPHONE

FIG. 37B

DOWNLOADING
REFERENCE MODELS

...

COMPLETED

MEMO

MENU

1	2	3
4	5	6
7	8	9
*	0	#

FIG. 37A

WANT TO DOWNLOAD
REFERENCE MODELS?

Yes

No

⇒ MEMO

⇒ MENU

MEMO

MENU

1	2	3
4	5	6
7	8	9
*	0	#

FIG. 38

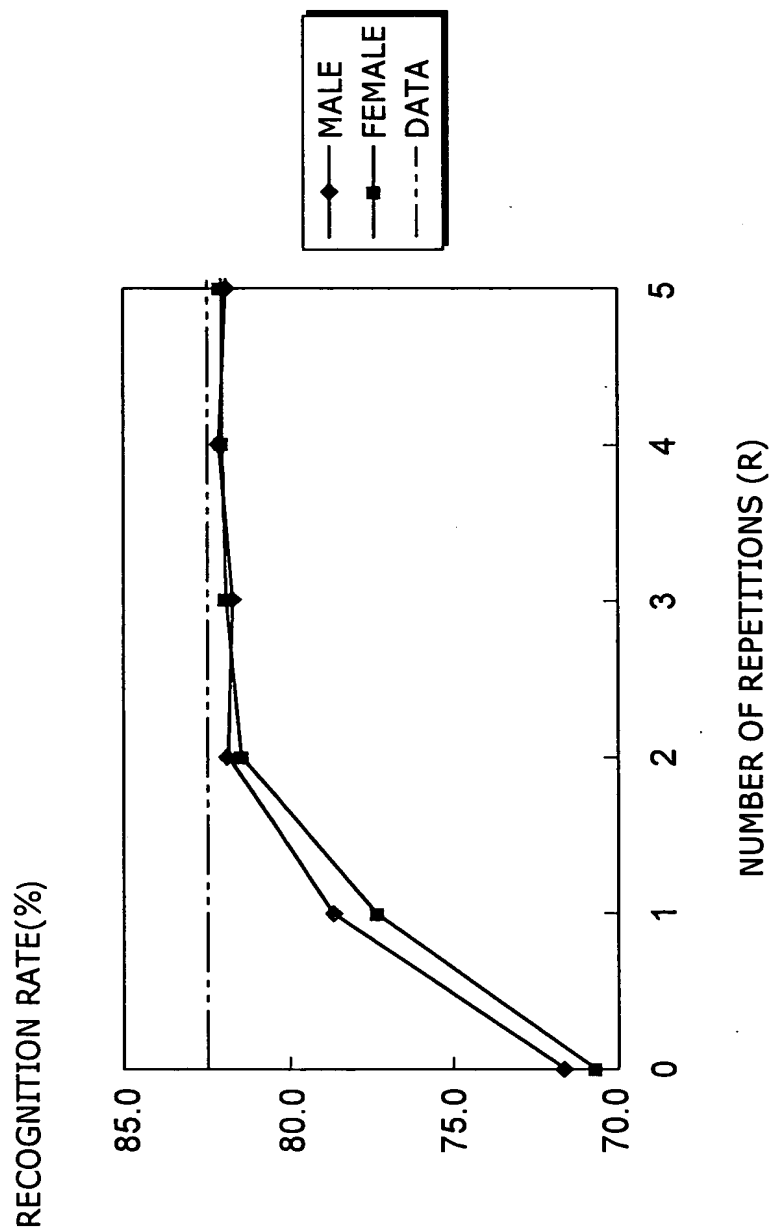


FIG. 39

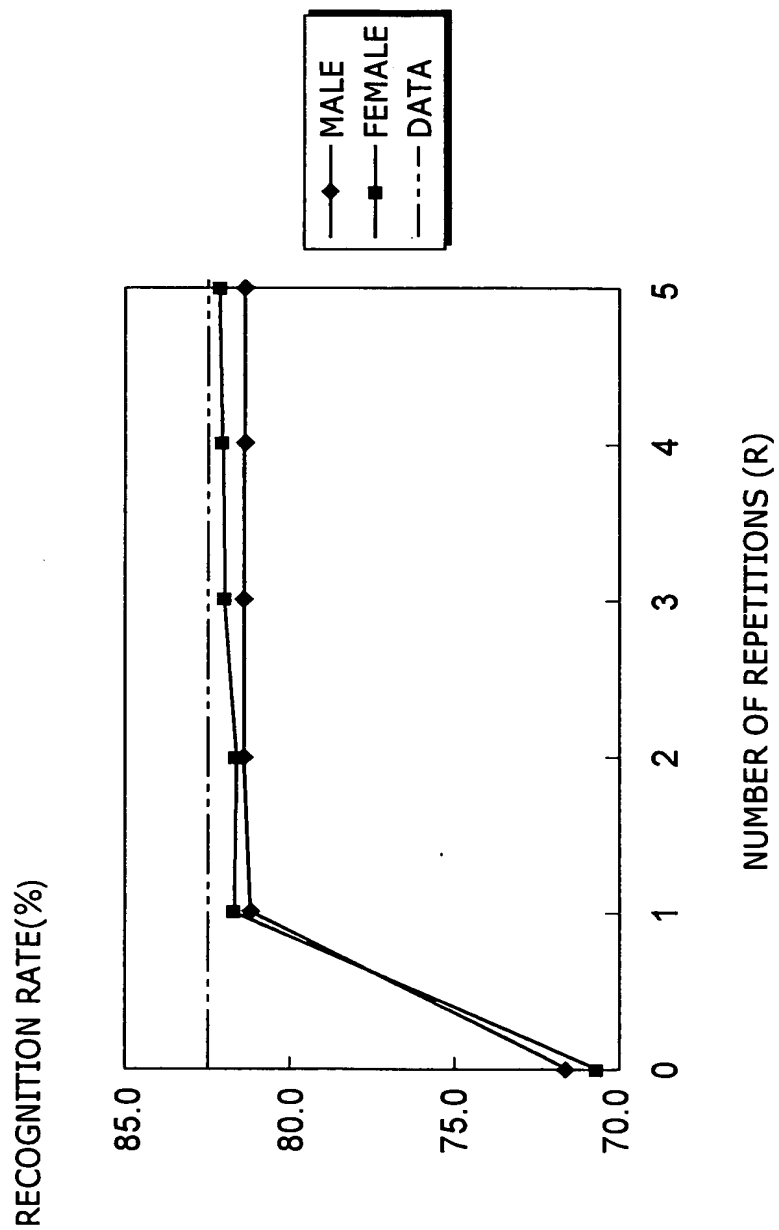


FIG. 40

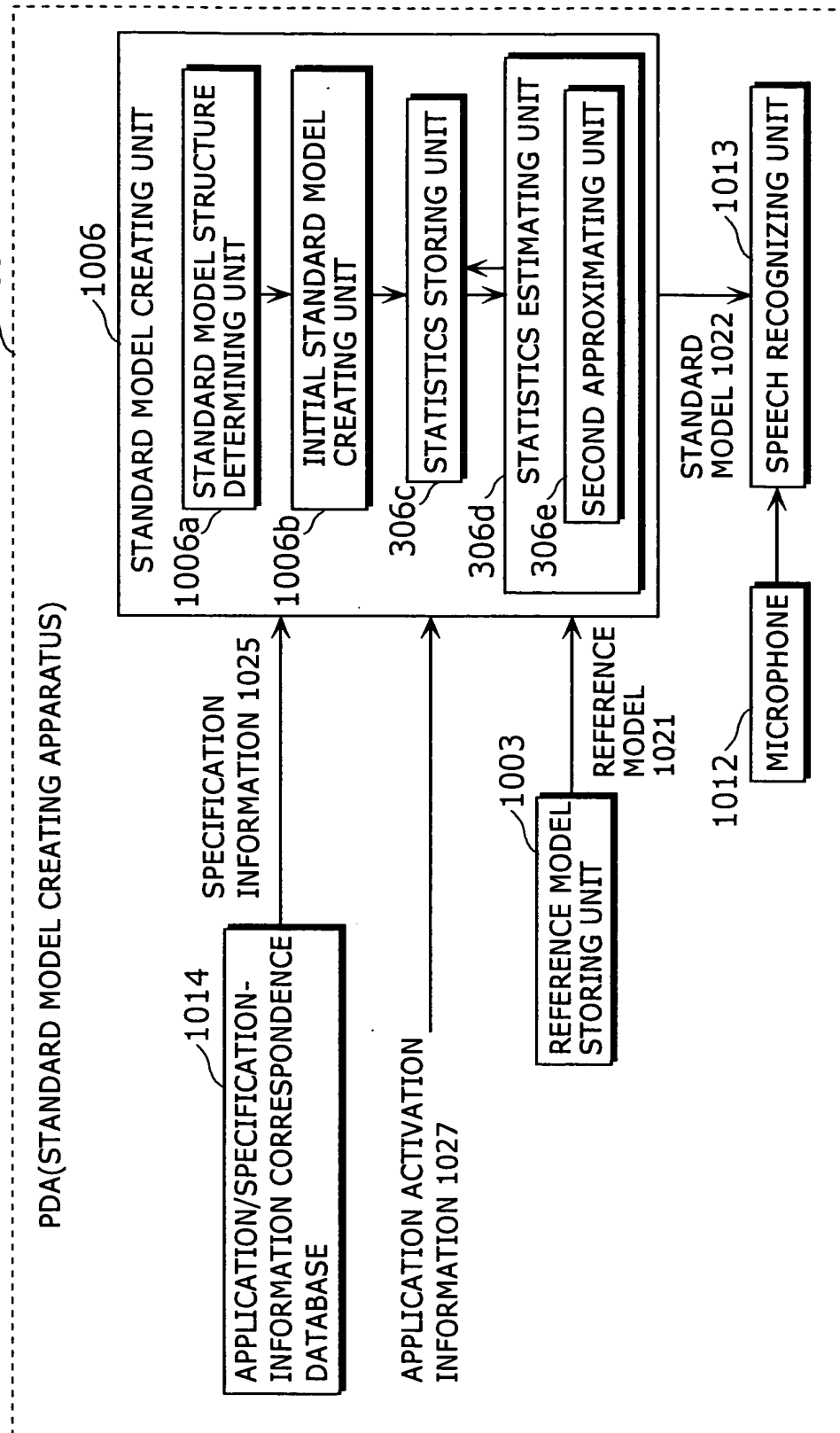


FIG. 41

APPLICATION		SPECIFICATION INFORMATION
ID	NAME	
1	GAME A	NUMBER OF MIXTURE DISTRIBUTIONS 3
2	GAME B	NUMBER OF MIXTURE DISTRIBUTIONS 5
3	STOCK MARKET	NUMBER OF MIXTURE DISTRIBUTIONS 126
4	TV REMOTE CONTROL	NUMBER OF MIXTURE DISTRIBUTIONS 5
5	TRANSLATION	NUMBER OF MIXTURE DISTRIBUTIONS 64

FIG. 42

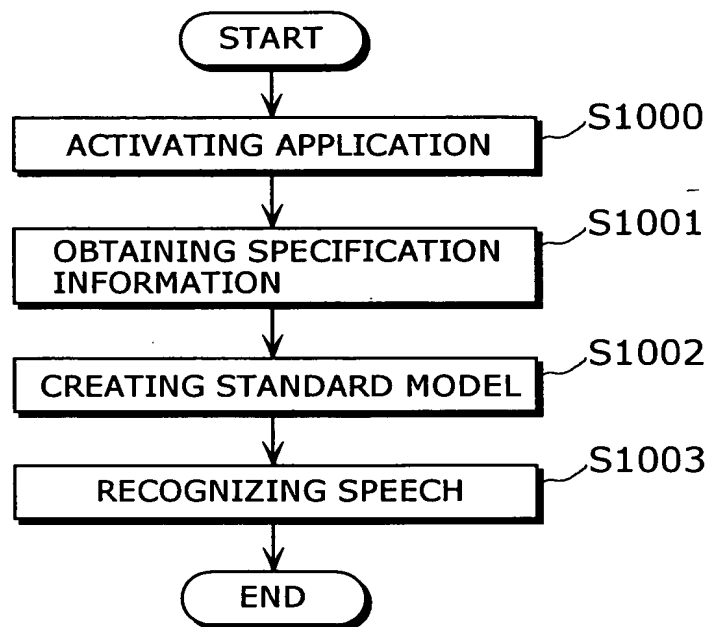


FIG. 43

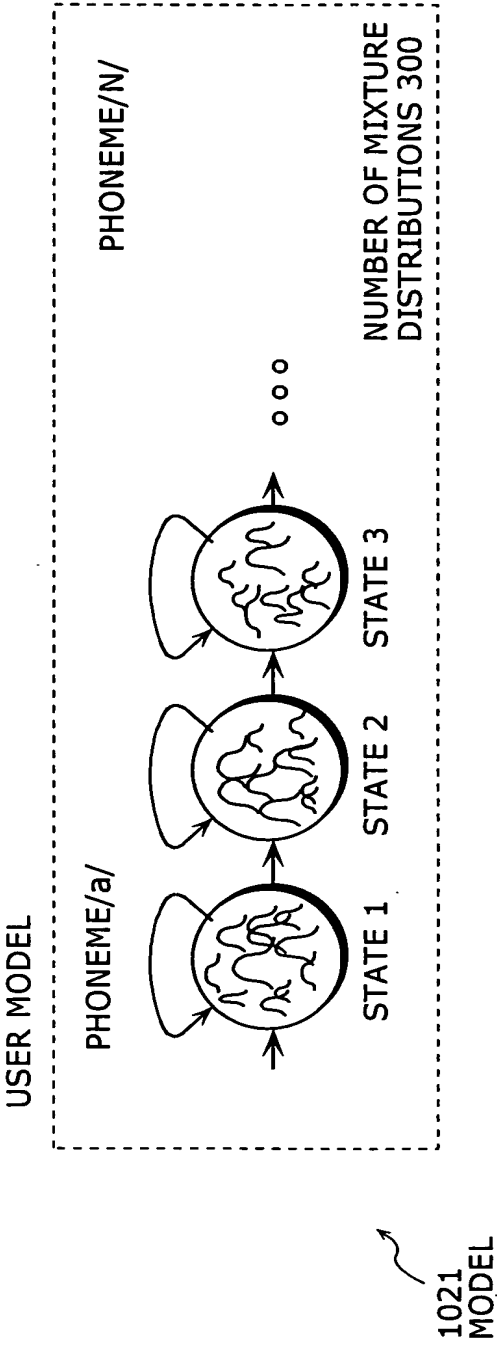


FIG. 44

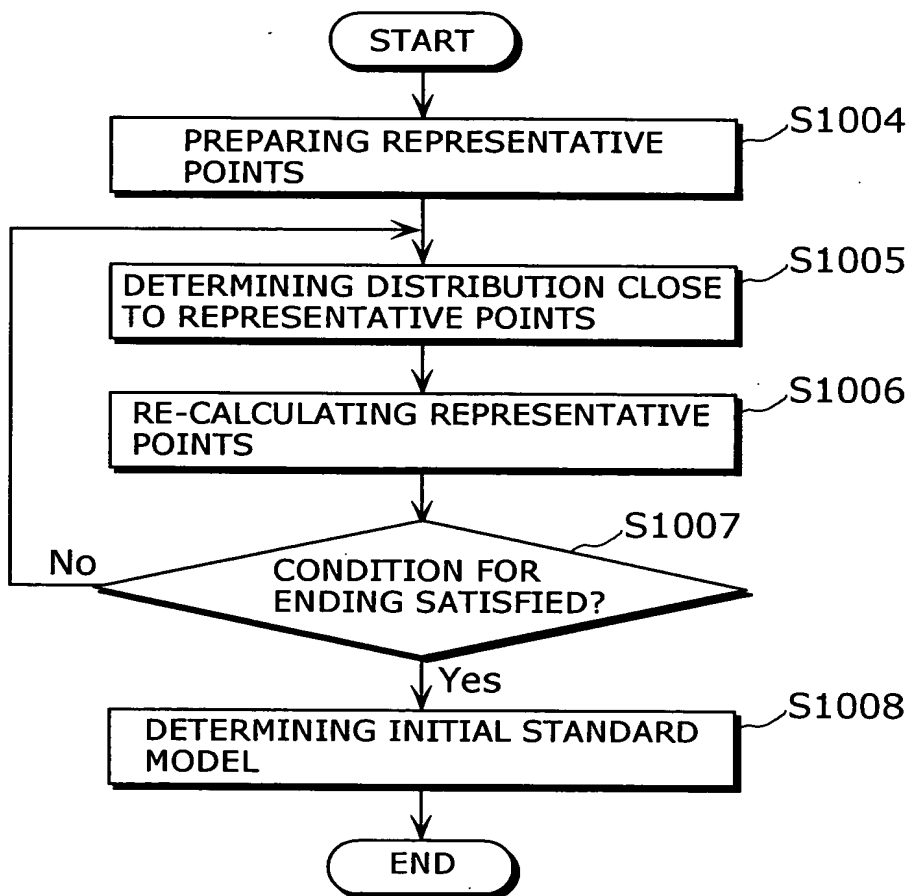


FIG. 45

REFERENCE MODEL(300 DISTRIBUTIONS)

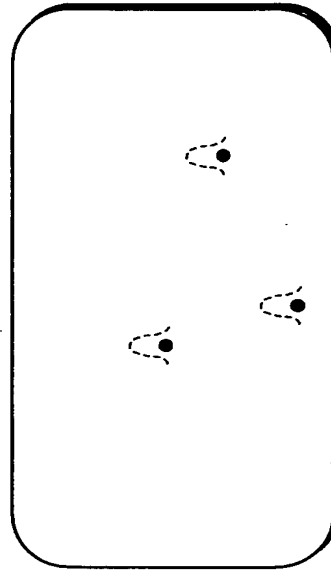
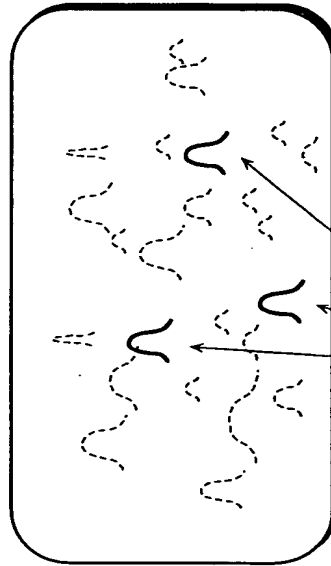
SELECTING 126 DISTRIBUTIONS (NUMBER OF
DISTRIBUTIONS OF STANDARD MODEL)DETERMINING MEAN VALUES OF
SELECTED 126 DISTRIBUTIONS AS
REPRESENTATIVE POINTS

FIG. 46

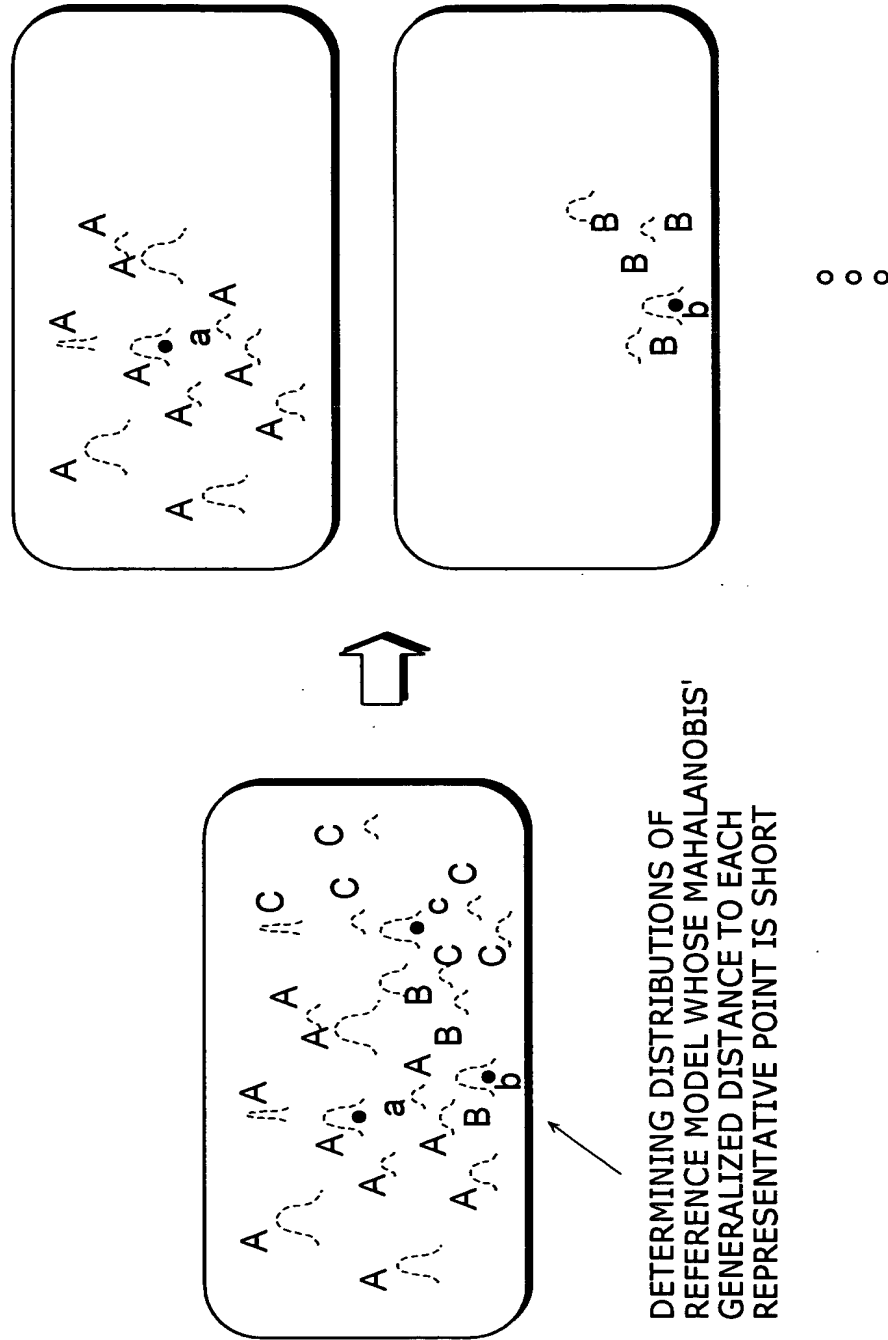


FIG. 47

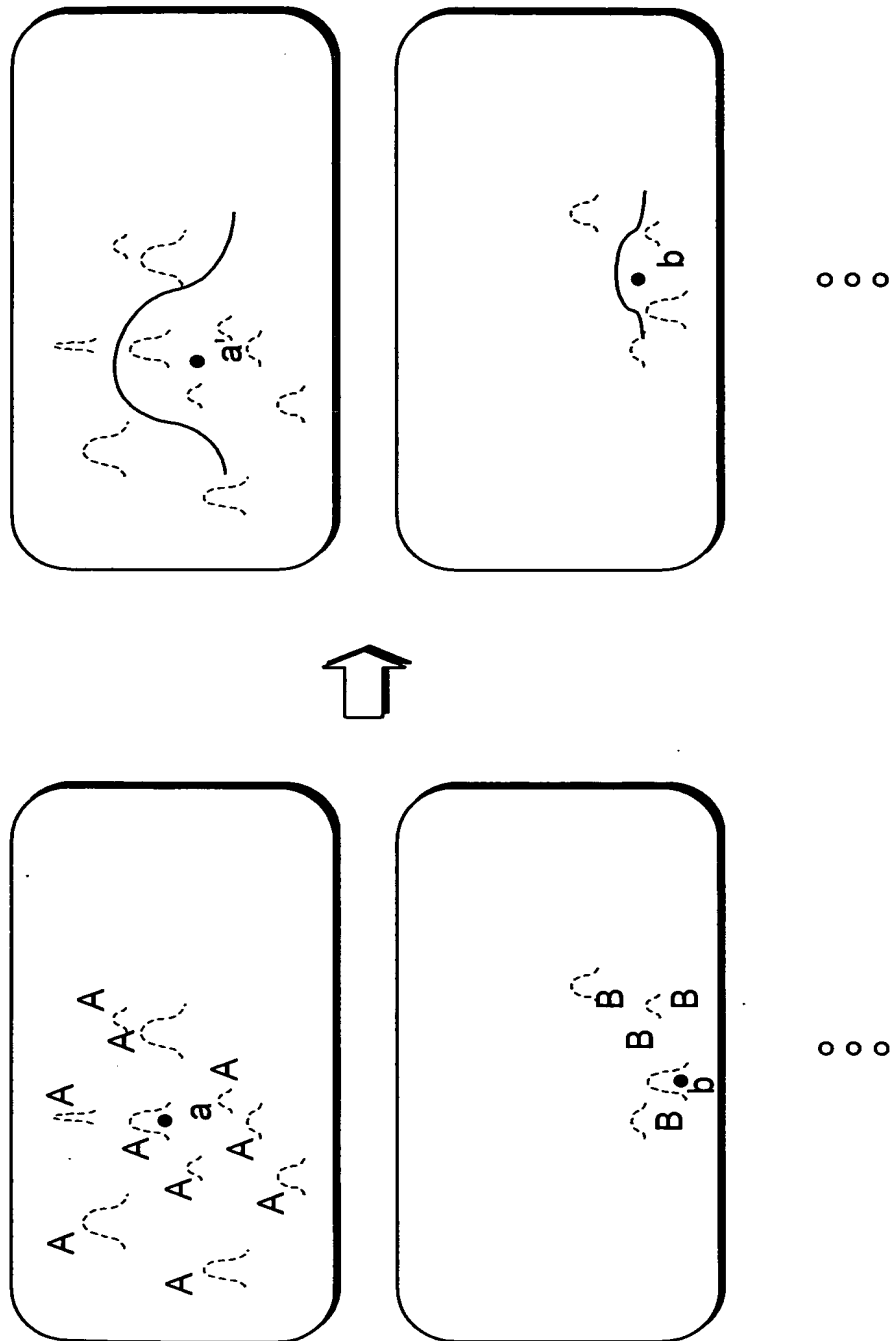


FIG. 48

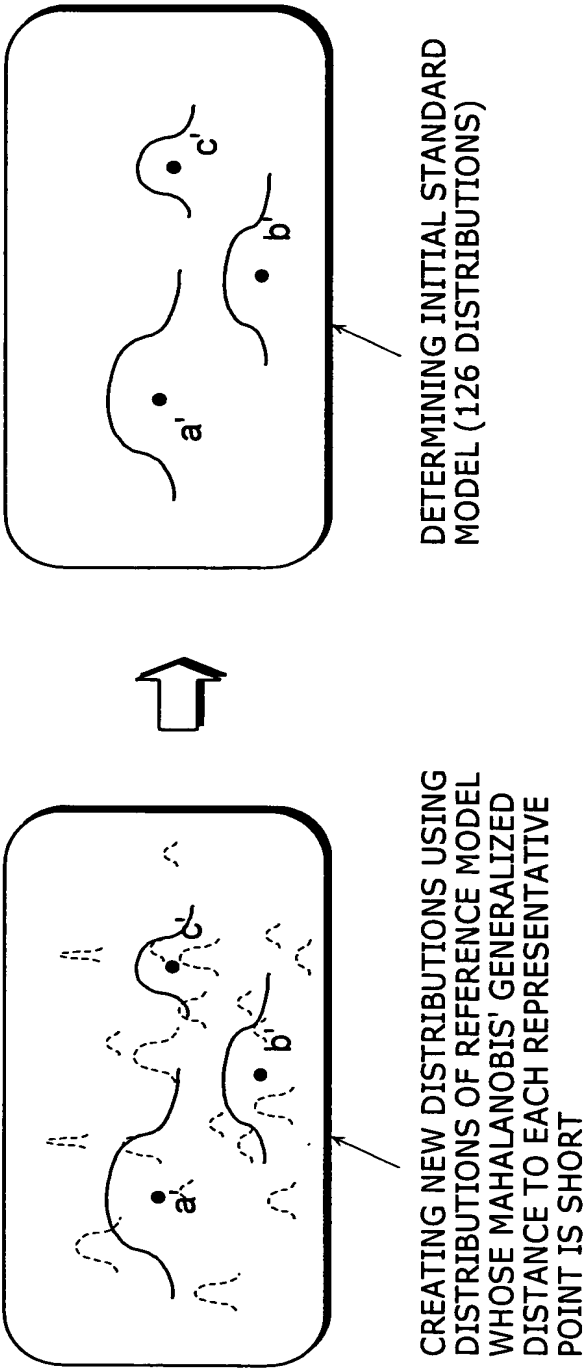


FIG. 49

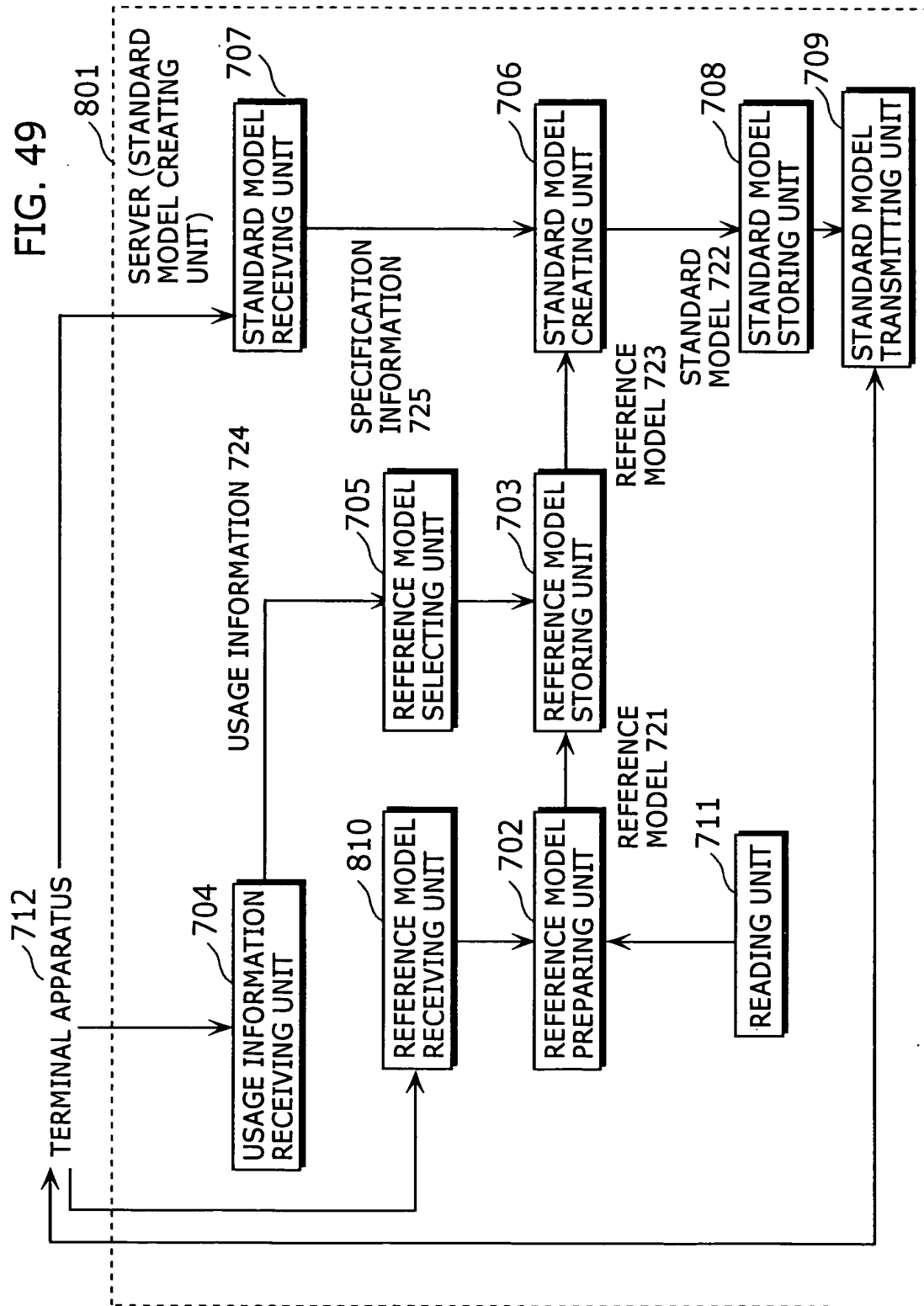


FIG. 50

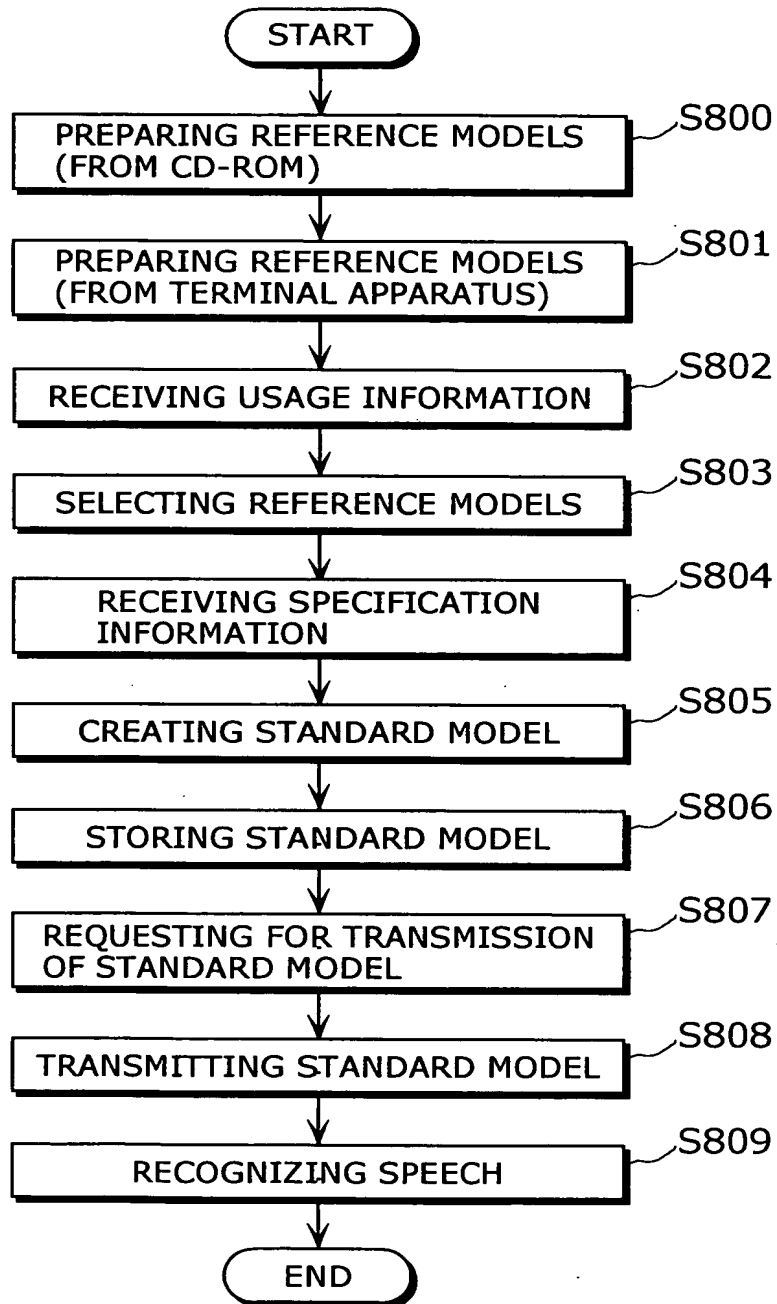


FIG. 51

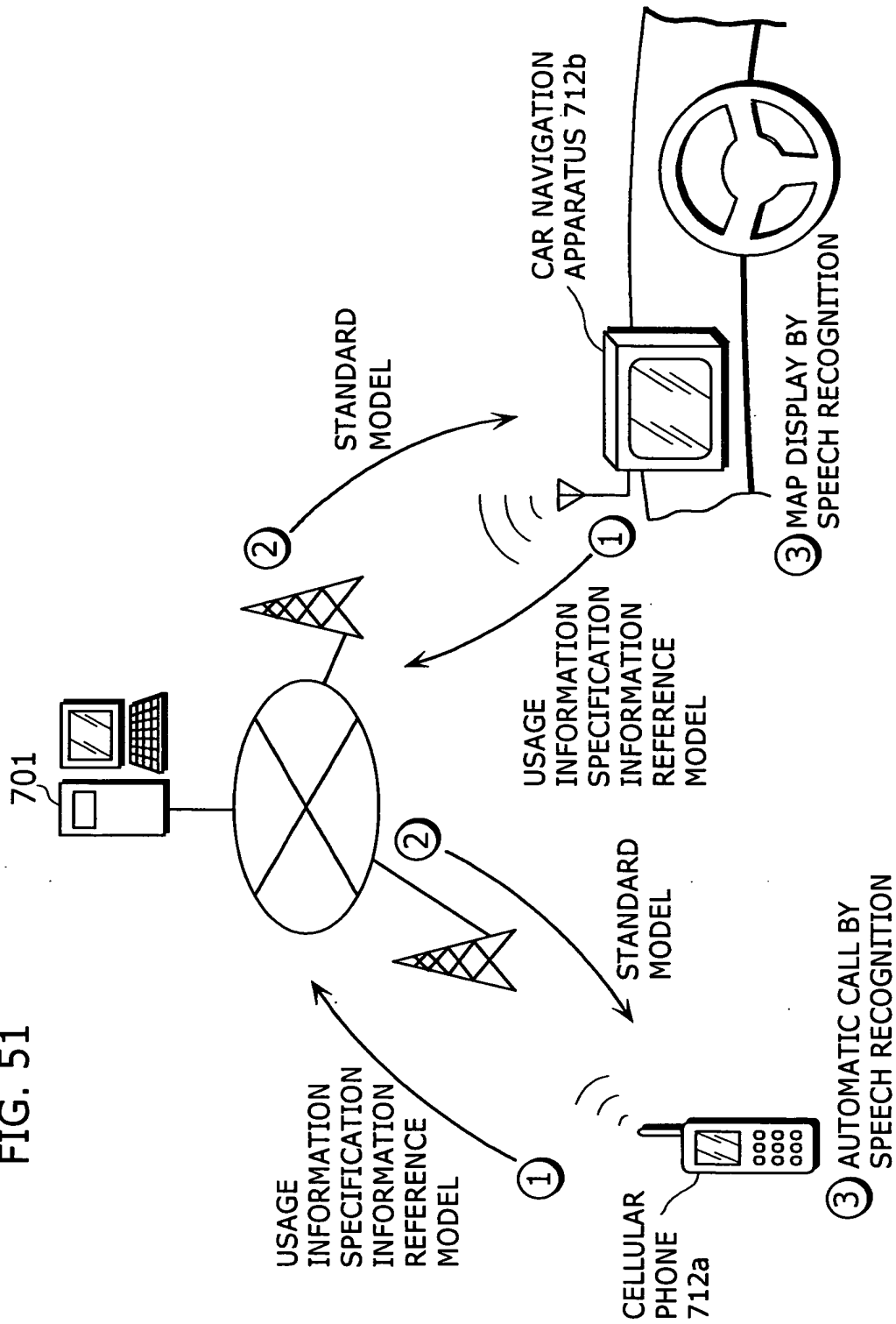


FIG. 52

CORRESPONDENCE TABLE AMONG CLASS ID,
INITIAL STANDARD MODEL, AND REFERENCE MODEL

CLASS ID	INITIAL STANDARD MODEL	REFERENCE MODEL
8A	INITIAL STANDARD MODEL 8A	REFERENCE MODEL 8AA
		REFERENCE MODEL 8AB
		REFERENCE MODEL 8AC
		⋮
		REFERENCE MODEL 8AZ
⋮	⋮	⋮
64Z	INITIAL STANDARD MODEL 64Z	REFERENCE MODEL 64ZA
		REFERENCE MODEL 64ZB
		REFERENCE MODEL 64ZC
		⋮
		REFERENCE MODEL 64ZZ

FIG. 53

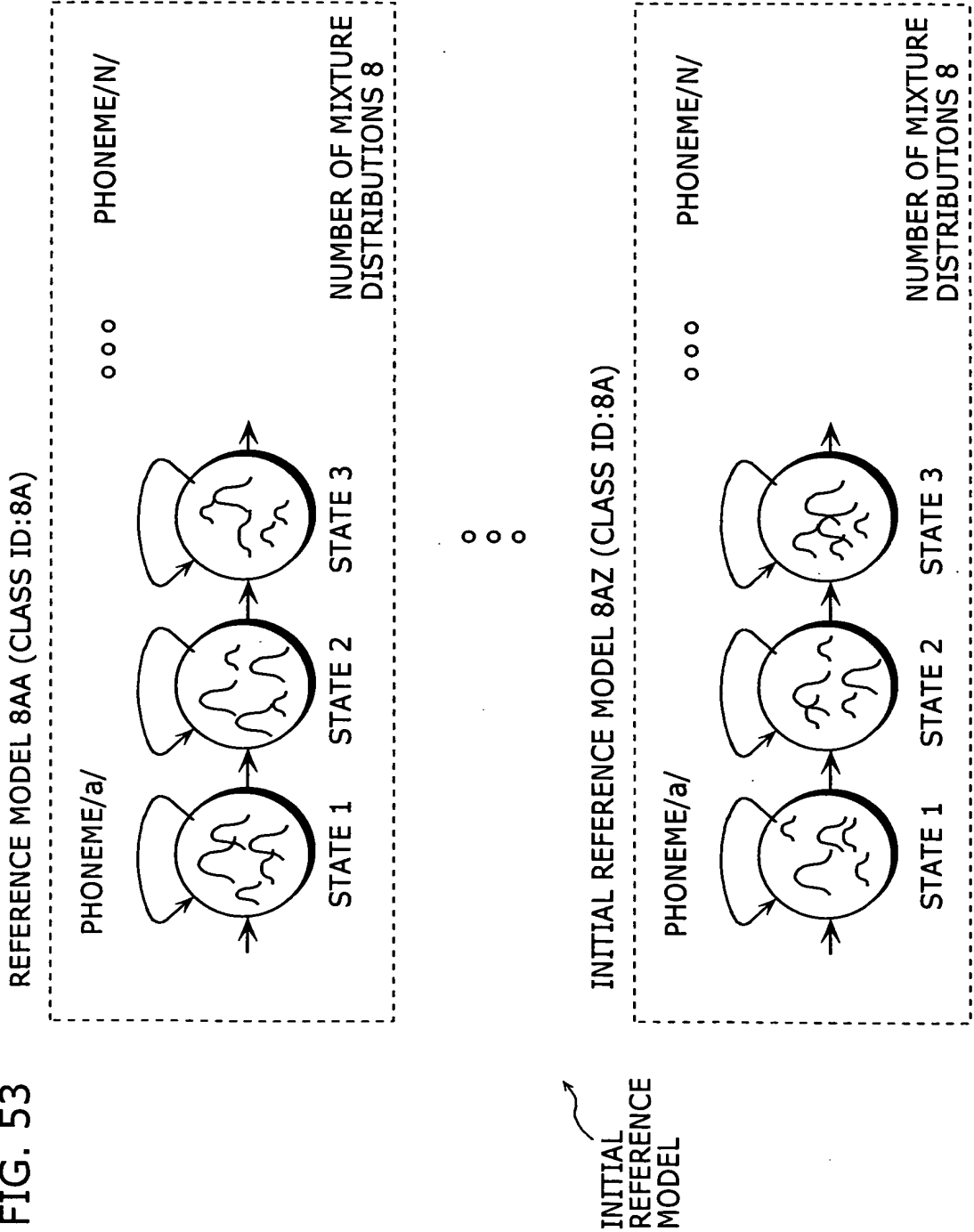


FIG. 54

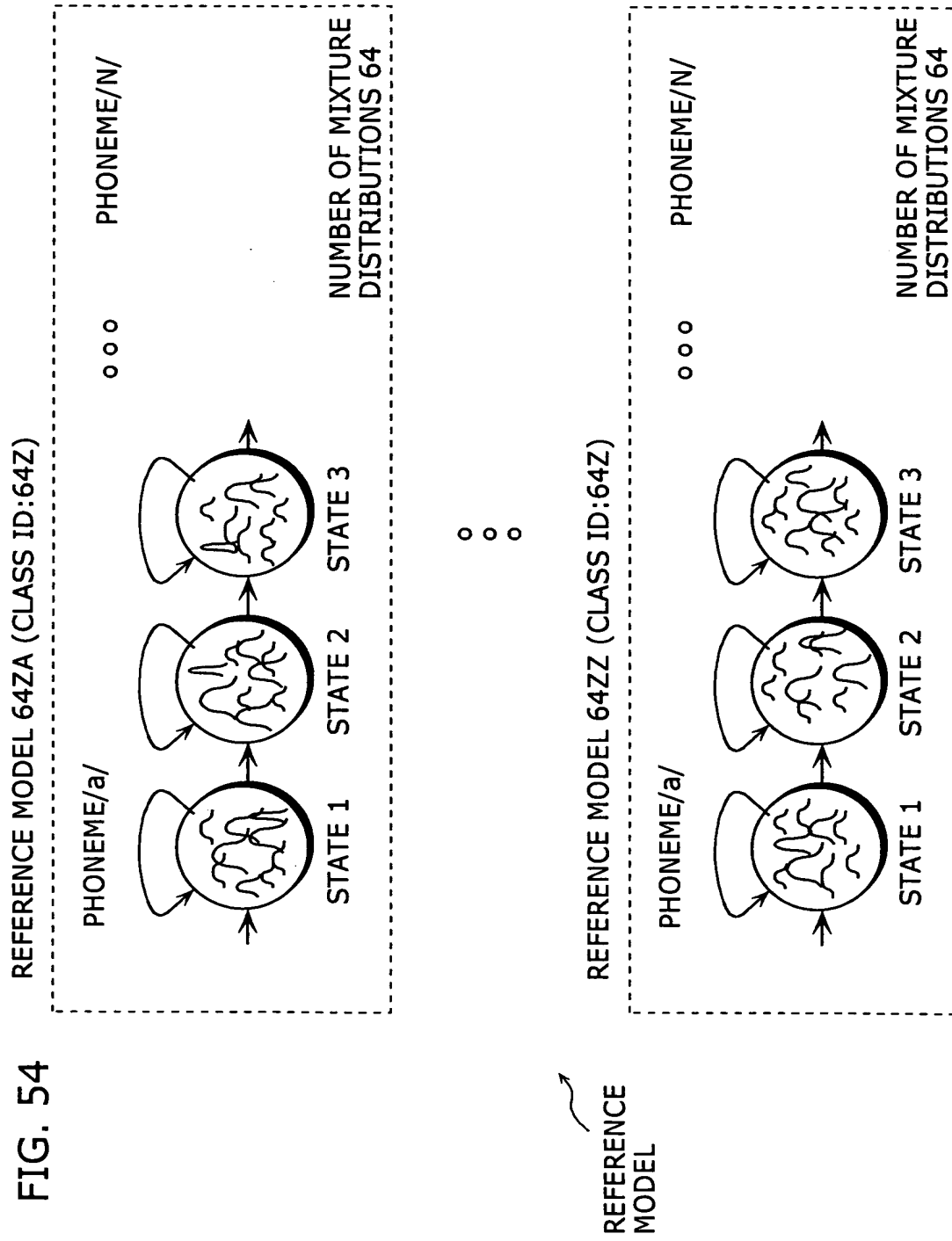
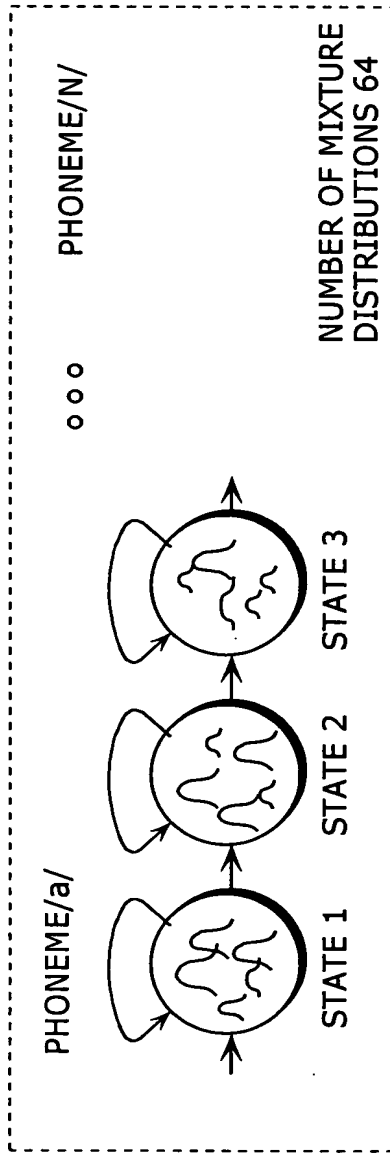


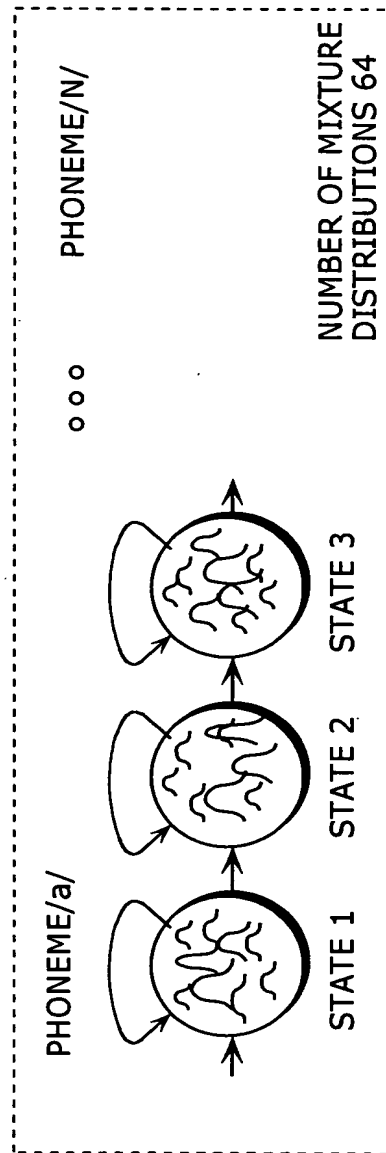
FIG. 55

REFERENCE MODEL 8A (CLASS ID:8A)



○
○
○

INITIAL STANDARD MODEL 64Z (CLASS ID:64Z)



INITIAL
STANDARD
MODEL

FIG. 56

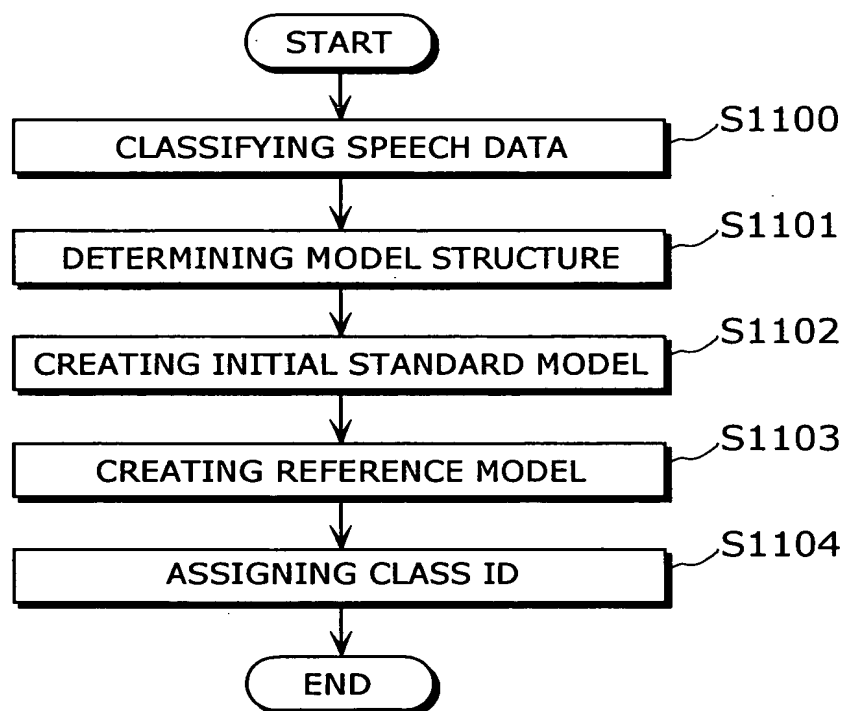


FIG. 57

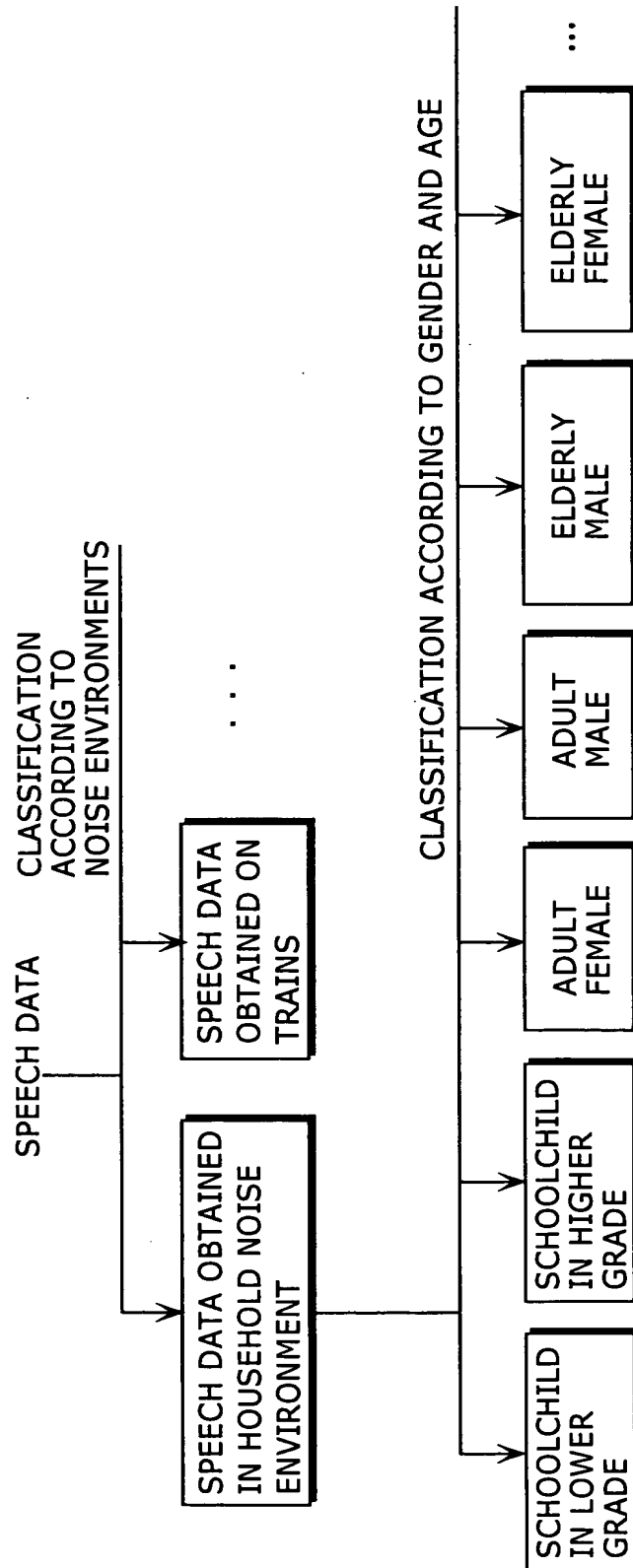


FIG. 58

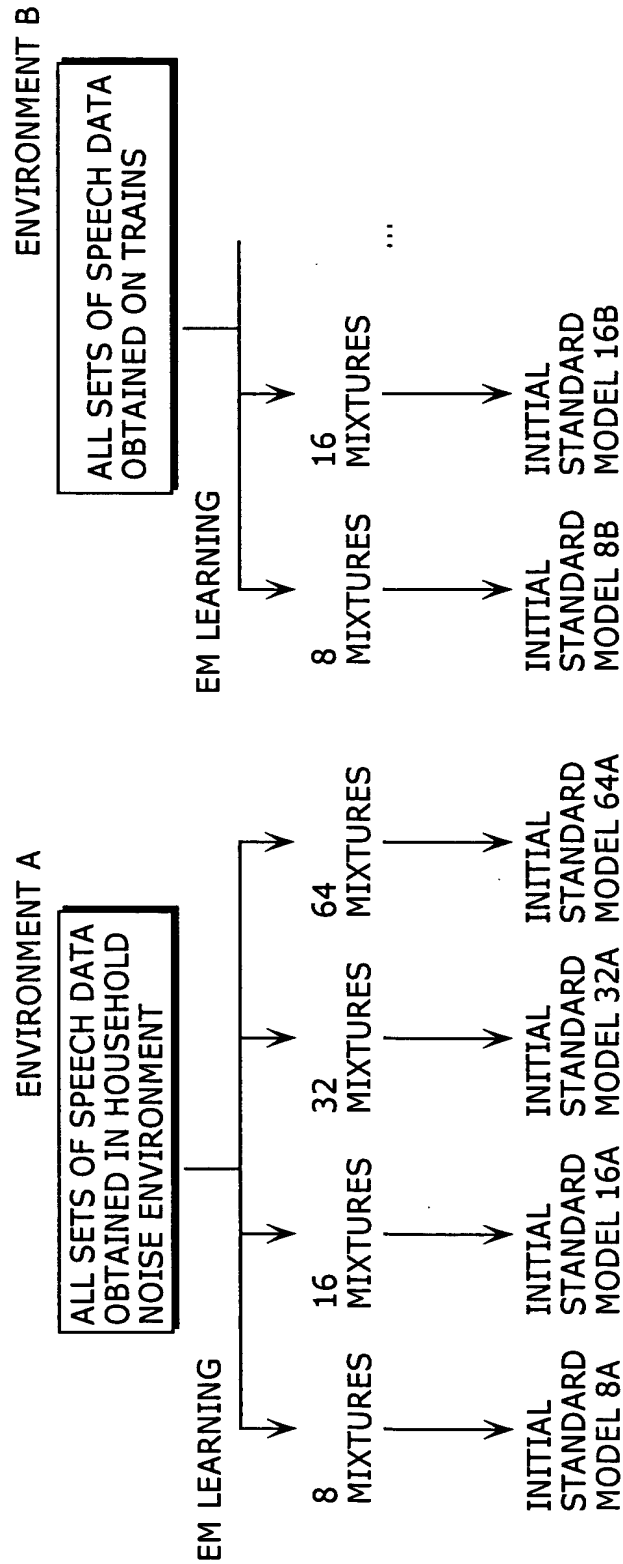


FIG. 59

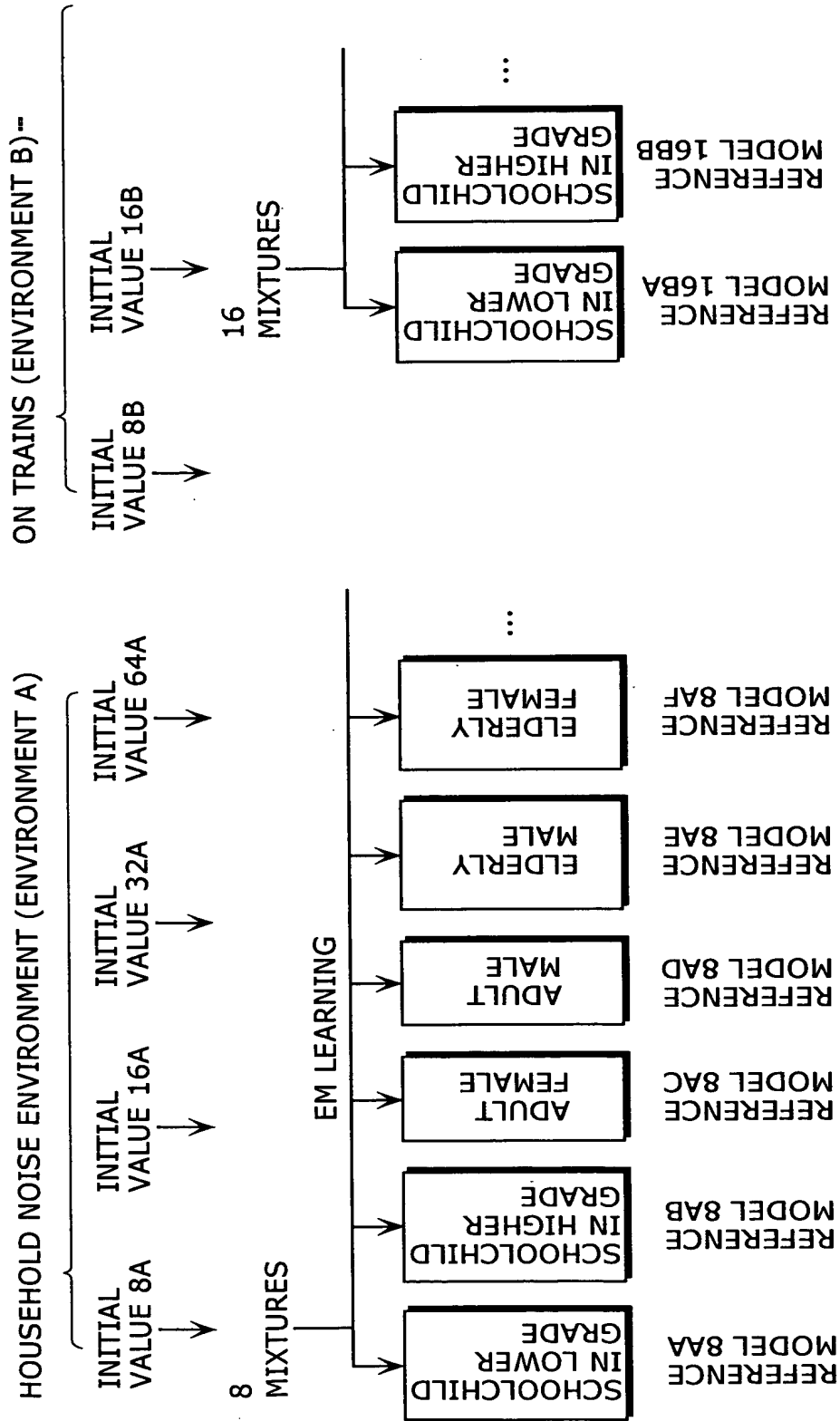


FIG. 60

CLASS ID	INITIAL STANDARD MODEL	REFERENCE MODEL	REMARKS (CHARACTERISTICS OF REFERENCE MODEL)
8A	INITIAL STANDARD MODEL 8A	REFERENCE MODEL 8AA	HOUSEHOLD NOISE, 8 MIXTURES, SCHOOLCHILD IN LOWER GRADE
		REFERENCE MODEL 8AB	HOUSEHOLD NOISE, 8 MIXTURES, SCHOOLCHILD IN HIGHER GRADE
		REFERENCE MODEL 8AC	HOUSEHOLD NOISE, 8 MIXTURES, ADULT FEMALE
		: : :	: :
16A	INITIAL STANDARD MODEL 16A	REFERENCE MODEL 16AA	HOUSEHOLD NOISE, 16 MIXTURES, SCHOOLCHILD IN LOWER GRADE
		REFERENCE MODEL 16AB	HOUSEHOLD NOISE, 16 MIXTURES, SCHOOLCHILD IN HIGHER GRADE
		REFERENCE MODEL 16AC	HOUSEHOLD NOISE, 16 MIXTURES, ADULT FEMALE
		: : :	: : :
: : :	: : :	: : :	: : :
64B	INITIAL STANDARD MODEL 64B	REFERENCE MODEL 64BA	ON TRAINS, 8 MIXTURES, SCHOOLCHILD IN LOWER GRADE
		REFERENCE MODEL 64BB	ON TRAINS, 8 MIXTURES, SCHOOLCHILD IN HIGHER GRADE
		REFERENCE MODEL 64BC	ON TRAINS, 8 MIXTURES, ADULT FEMALE
		: : :	: : :

FIG. 61

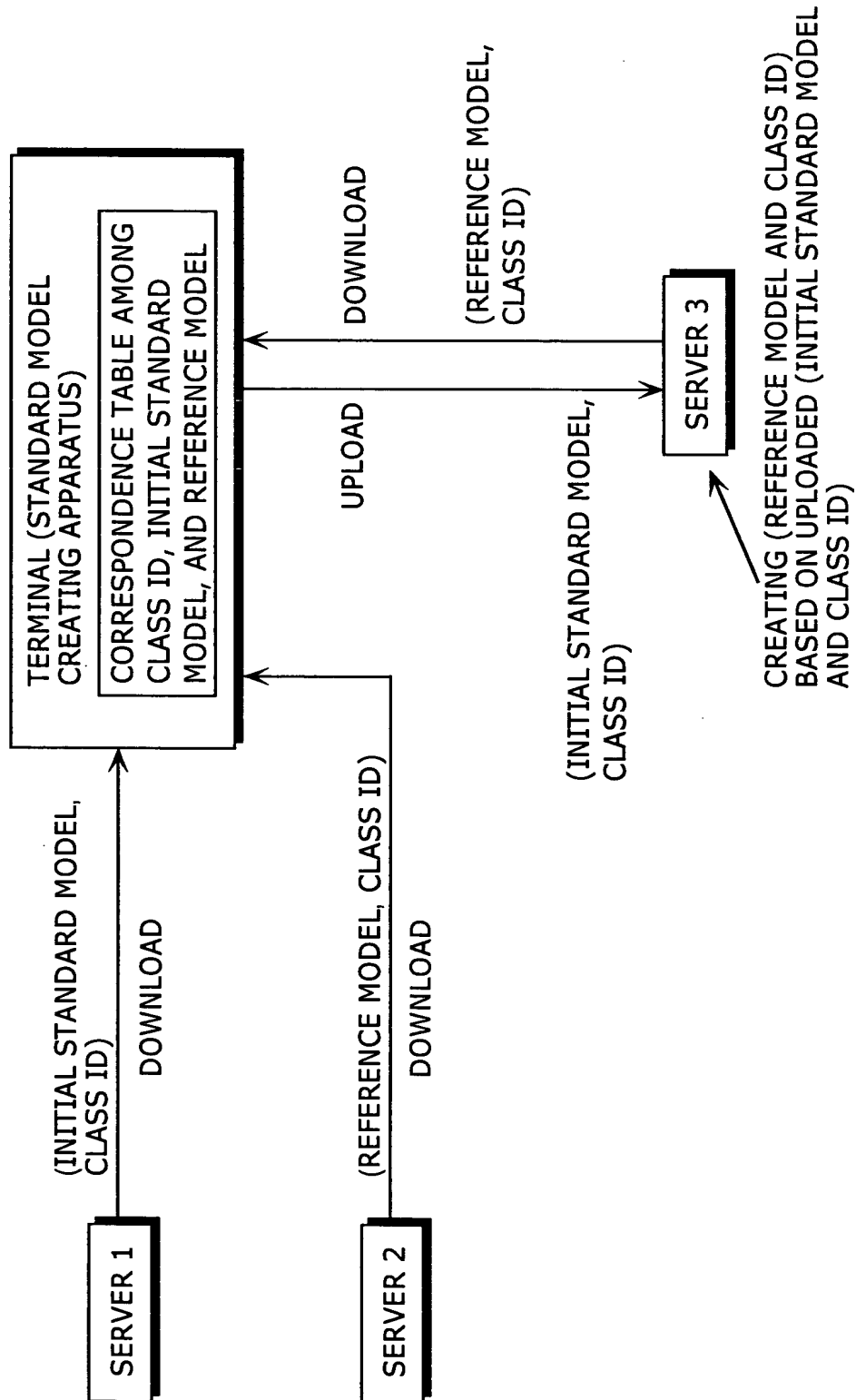


FIG. 62

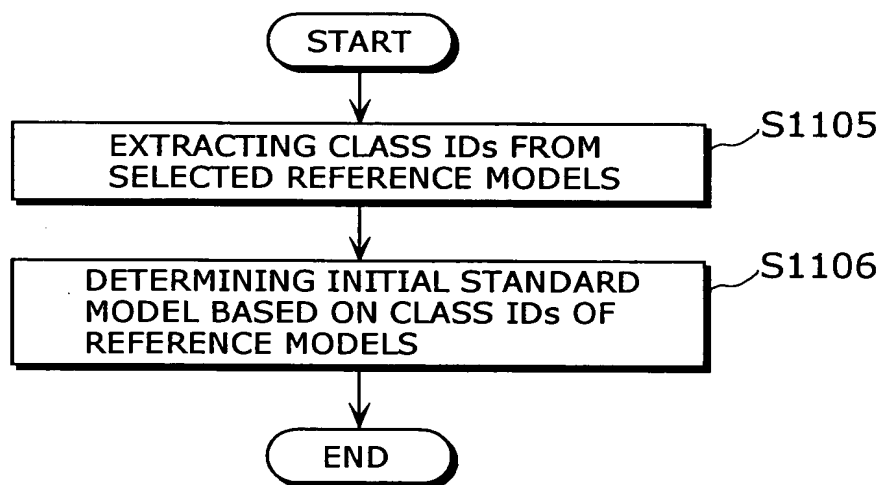


FIG. 63

SELECTED REFERENCE MODELS	CLASS ID
SELECTED REFERENCE MODEL 8AA	8A
SELECTED REFERENCE MODEL 16AA	16A
SELECTED REFERENCE MODEL 16AB	16A
SELECTED REFERENCE MODEL 16AC	16A
SELECTED REFERENCE MODEL 16BA	16B
SELECTED REFERENCE MODEL 64BA	64B

FIG. 64

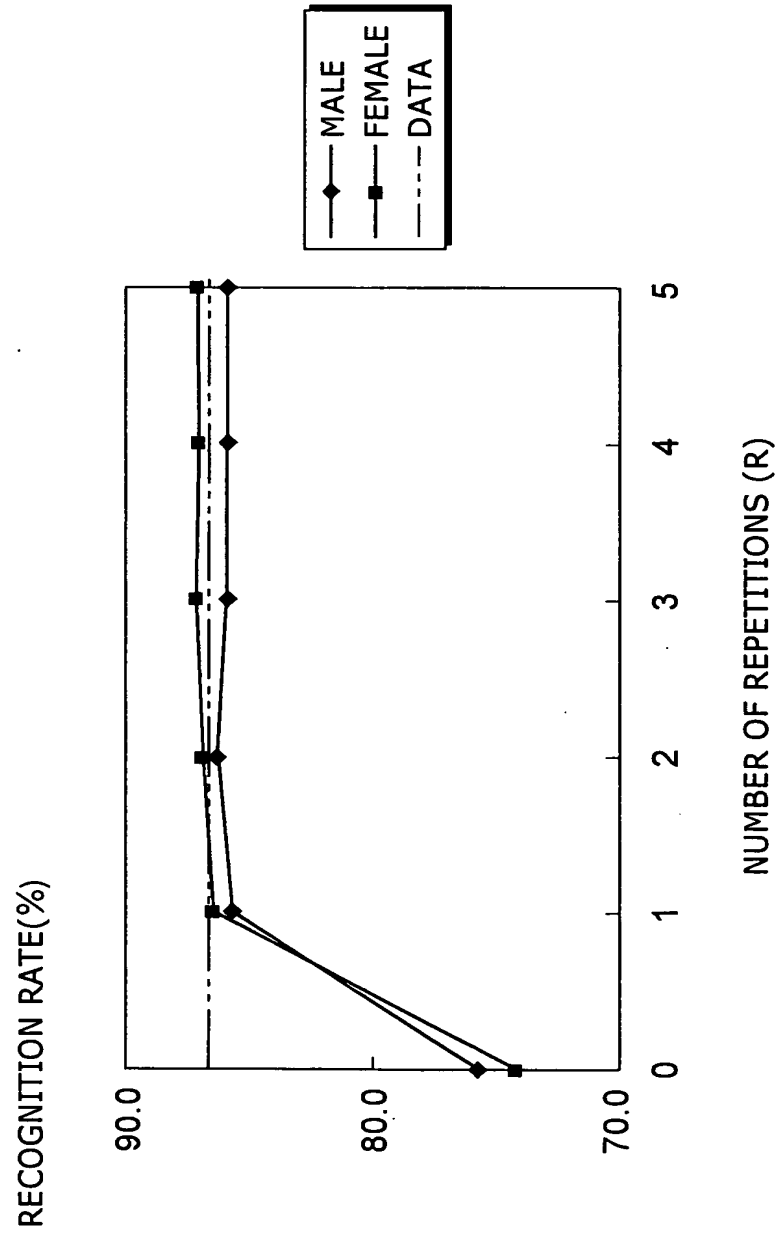


FIG. 65A

AGE CHILD ADULT ELDERLY
STRUCTURE 64 MIXTURES 16 MIXTURES 100 MIXTURES
Reason: Due to variations in voices of children and the elderly, large number are set for their mixtures to create high-precision model.

FIG. 65C

TEXTURE OF SPEAKER'S VOICE NORMAL HUSKY HOARES
STRUCTURE 16 MIXTURES 64 MIXTURES 100 MIXTURES

FIG. 65E

SPEAKING RATE NORMAL FAST/SLOW
STRUCTURE 16 MIXTURES 100 MIXTURES

FIG. 65G

DIALECT STANDARD OSAKA KAGOSHIMA LANGUAGE DIALECT DIALECT
STRUCTURE 16 MIXTURES 100 MIXTURES 200 MIXTURES

FIG. 65I

MICROPHONE STANDARD LOW HIGH LEVEL LEVEL
STRUCTURE 16 MIXTURES 10 MIXTURES 100 MIXTURES

FIG. 65B

GENDER FEMALE MALE
STRUCTURE 16 MIXTURES 64 MIXTURES
Reason: Variations in male voice are greater than those in female voice.

FIG. 65D

TOE OF VOICE WITH EMOTIONS NORMAL ANGRY /LAUGHING VOICE
STRUCTURE 16 MIXTURES 64 MIXTURES 100 MIXTURES

FIG. 65F

CIVILITY IN DECLAMATORY ADDRESSING CONVERSATIONAL UTTERANCE TONE TONE TONE
STRUCTURE 16 MIXTURES 64 MIXTURES 200 MIXTURES

FIG. 65H

BACKGROUND NOISY QUIET SLIGHTLY NOISY NOISY (SN RATIO) (30dB) (20dB) (10dB)
STRUCTURE 200 MIXTURES 64 MIXTURES 10 MIXTURES
Reason: If noisy, ambiguous model with a small number of mixtures can respond to variations in noise types.

FIG. 65J

COMPLEXITY IN RECOGNIZABLE VOCABULARY WORD SHORT LONG SENTENCE SENTENCE (DIFFICULT)
STRUCTURE 10 MIXTURES 64 MIXTURES 200 MIXTURES